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Wrought Iron

answers the corrosion problems

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The Southside Plant, larger of the two and illustrated above, is a two-stage trickling-filter plant; the Northside Plant is an activated-sludge plant. Both plants are new developments in the city's 9-million dollar program to modernize its industrial waste and domestic sewage disposal. Benham Engineering Company, Oklahoma City, were consulting and supervising engineers on the project.

The confidence among engineers and designers in the use of wrought iron pipe and plate for protection against corrosion in sewage disposal services is almost universal. In Salina, Kansas, for example, wrought iron was used in seven vital services. The Independence, Missouri Treatment Plant is safeguarded by wrought iron in four services. Port Huron, Michigan is another installation where wrought iron was selected as a safeguard against corrosion. And at Hyperion Sewage Treatment Plant, Los Angeles, wrought iron was put to work in 51 services.

Our bulletin, *Wrought Iron For Sewage Treatment and Disposal Installations,* discusses corrosion problems in a variety of services, and illustrates how wrought iron is helping to solve maintenance problems to the complete satisfaction of users. Write for your copy.

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Contents on page 17

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E. E. Halmos Jr. — *Managing Editor*
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V. T. Boughton — *Transportation, Power*
F. S. Merritt — *Architectural, Structural*
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S. C. Jensen — *Materials and Equipment*
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Publisher

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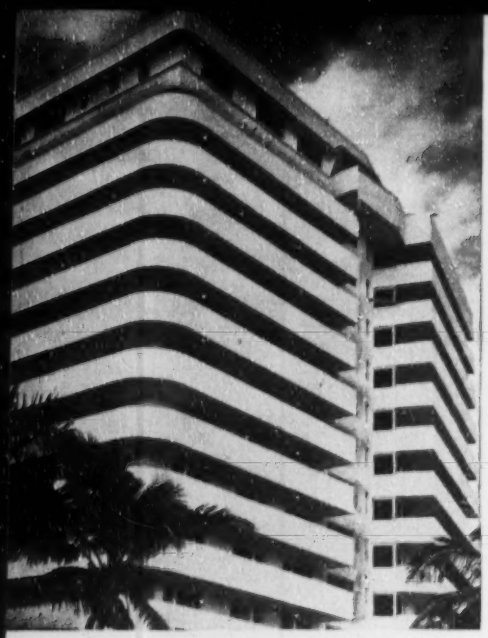
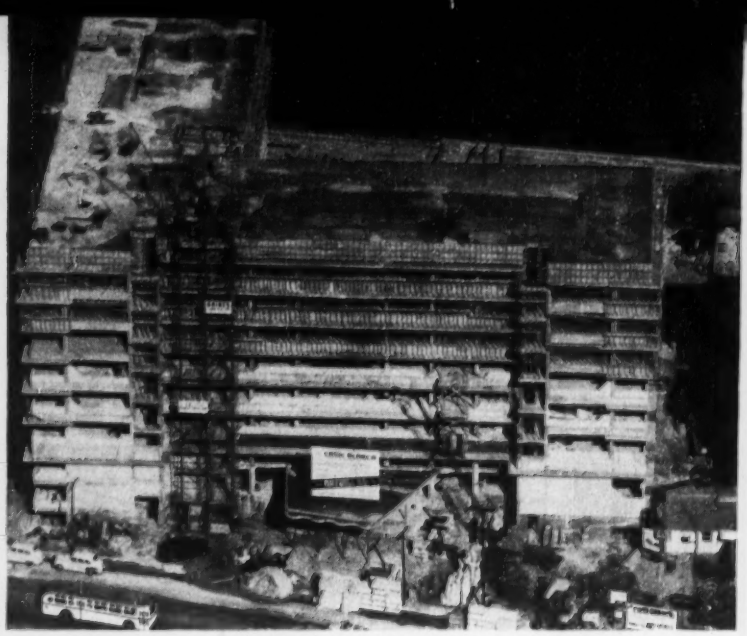


The 300-room ocean front Sherry-Frontenac Hotel, Miami Beach, towers 13 stories, cost $4 million. Steeltex throughout in floors and roof. Henry Hohauser & Associates, Architects. Cashay Corp., Contractors.



The 9-story Casa Blanca Hotel, Miami Beach, shown here while under construction, is now in operation, cost $2.2 million, has 250 rooms. Steeltex used in all floors and roof. Roy F. France & Son, Architects. Gaines Construction Co., Contractors.

Biscayne Terrace Hotel in downtown Miami has 200 rooms, 10 stories, cost $2 million. 250,000 square feet of Steeltex in floors and roof. Albert Anis and Melvin Grossman, Architects. Edward M. Fleming Construction Co., Contractors.

Why STEELTEX® has been the overwhelming concrete floors in Miami's

Southeast Florida is one of the fastest growing regions in the country and Miami Beach has the largest concentration of hotels, motels and apartments of any city in the world—more than 375 hotels containing more than 25,000 rooms and some 1,400 apartment buildings containing 36,000 rooms! Here unusual designs are commonplace, the architect is free to use ideas to his heart's content. People who come to Miami Beach are on vacation, they are free to pick and choose the most modern, most beautiful, most comfortable surroundings for their visit to this vacation paradise!

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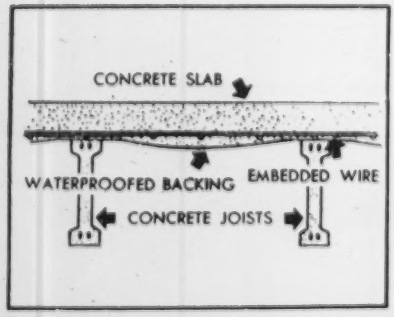
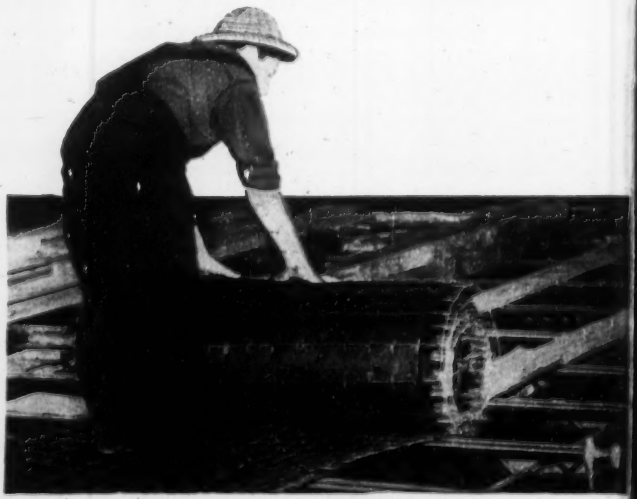


NOTE: In the cross section that the weight of the wet concrete forces the backing away, which permits the galvanized steel mesh to assume its proper position in the slab. Steeltex floor lath also performs two other functions: It permits work on the floor below while pouring is in progress and retains moisture to assist proper curing.



A complete vacation resort under one roof, the $3.5 million DiLido Hotel, Miami Beach's newest, opened last Christmas Eve, has 329 rooms, 9 stories, 2 swimming pools, 300 feet of ocean beach, 120 cabañas. Steeltex used in floors and roof. Melvin Grossman and Morris Lapidus, Architects. Robert L. Turchin, Inc., Contractors.

favorite for reinforcing newest hotels and apartments!

ing. It costs less to install than other types of forms and reinforcement for concrete because Steeltex can be rolled out like a carpet by one man (see photo below). Steeltex also saves concrete by minimizing leakage in the freshly poured slab—craftsmen on the floor below can continue working without getting drenched. Steeltex insures a strong floor because embedment of steel reinforcing takes place automatically (see note below). Steeltex allows concrete to cure slowly and properly—guards against excessive cracking—can be installed over any type of joist—will support ample safe loads from 109 lbs. to 886 lbs. per square foot depending on spacing of joists and thickness of slab. No wonder Steeltex is the overwhelming favorite with building designers in America's favorite winter resort.

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Algiers Hotel, Miami Beach, cost $1 million, has 8 stories, 200 rooms. Steeltex used in all floors and roof. Henry Hohauser & Associates, Architects. Taylor Construction Co., Contractors.

Prize winning Lanai Apartments, Miami, contains 24 units, took top honors in apartment house class in judging at A.I.A. South Atlantic Regional Conference in Miami last spring. Steeltex used only in second and third floors. Wahl Snyder, Architect. Alonzo Riley, Contractor.

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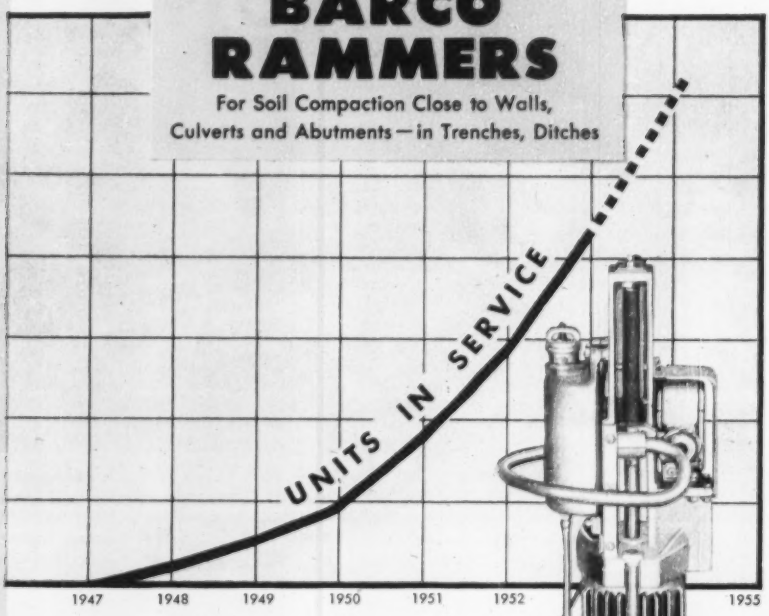

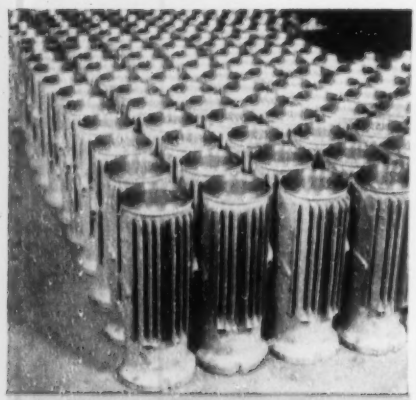

These cylinder bodies are being used in early 1954 shipments of BARCO RAMMERS. All machining, assembling, and testing of Rammers is handled in Barco's new Barrington, Illinois, plant shown below.

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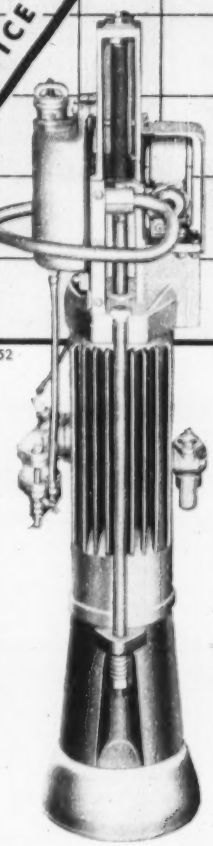

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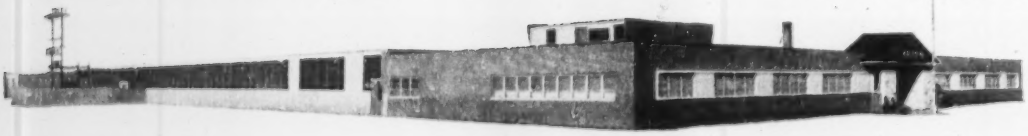

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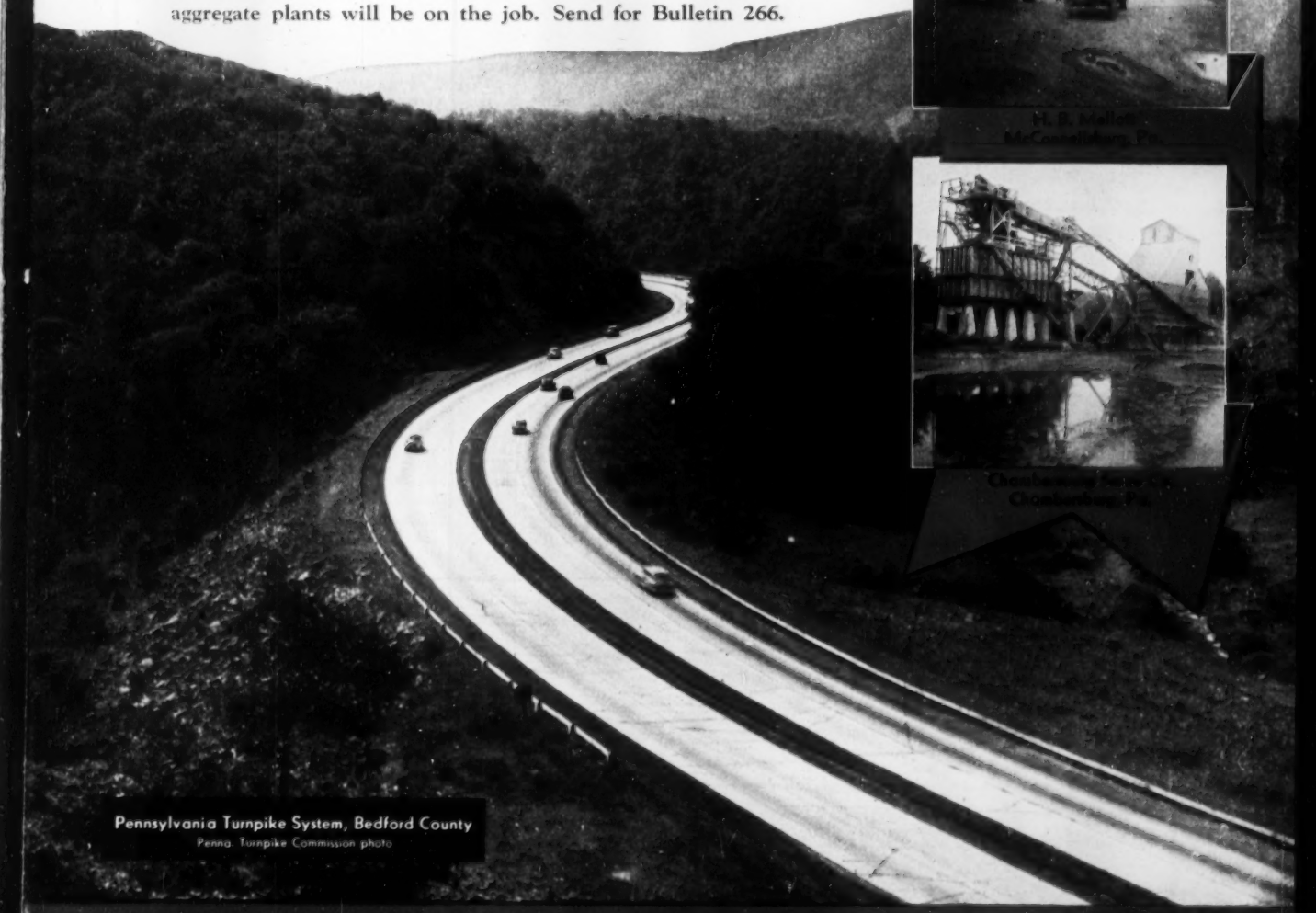

Pennsylvania Turnpike System, Bedford County
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READER COMMENT

This code has the answer

SIR: The problem mentioned in the article, "Building code confusion: It hampers wall design," by Frederick S. Merritt, ENR associate editor, (ENR Dec. 24, 1953, p. 21) is very difficult to solve. As far as the Southern Building Code Congress is concerned, we have exploited every angle to reduce the cost of non-bearing wall construction and the only solution we have been able to determine is as follows:

We must recognize the value of esthetics. Many will say that this is a matter of zoning. This is not the case at all; for zoning does not enter into exterior-wall requirements, and to have proper esthetics from the standpoint of developing municipalities along sane and sound lines, we must divide our types and give every possible advantage to a type with safe restrictions.

It is our purpose to search every means possible for the safe use of all materials, panels, etc., because in this lies the best hope for progress in building codes as well as that of our municipalities. We believe we have the solution pretty well in hand at this writing—we have inserted a paragraph in the Administrative Chapter that would give authority to the building official, through the Board of Appeals in each community, to permit alternate types of construction. In this fashion, misuse of non-combustible exterior-wall construction will be prevented.

In our opinion, the only solution rests in those non-combustible materails that will meet the eye values of our communities. So long as we permit use only of non-combustible materials of satisfactory esthetic value, such as glass, porcelain enamel, stainless steel and aluminum properly designed for exterior use, we can further light, sandwich wall construction.

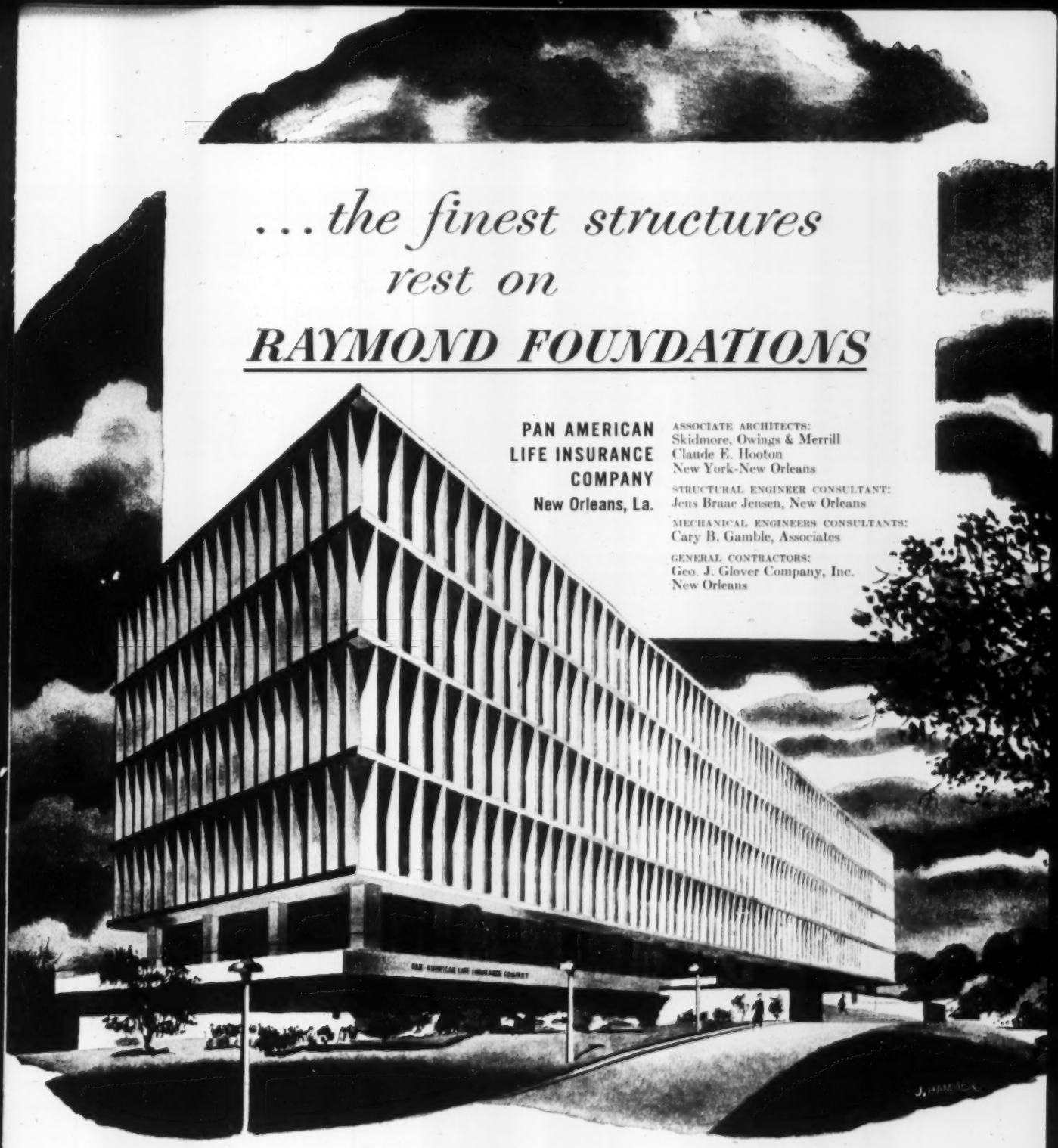
Certainly in the South, because of our warm, humid climate, lies the best progress in thin-skin wall construction. Insulation requirements lead to greater wall thickness in the northern climates than in the South; so climatic factors play a very important part in panel-wall construction.

The Southern Code permits buildings of limited height and use, such as parking decks, without exterior walls. We also have a provision for large glass areas, independent of the height of the building but dependent on certain exposures; i.e., a minimum horizontal distance of 30 ft on street fronts.

While we stipulate glass areas, we

(Continued on page 10)

...the finest structures rest on RAYMOND FOUNDATIONS



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READER COMMENT

recognize this can be interpreted from a building official's standpoint as applying to any material that has the same rating and esthetic value as glass. Thus, in addition, to our Administrative Chapter, which gives flexibility in the communities, we also have set down a standard that can be literally interpreted as applying to any material equivalent to glass.

We believe we have the smartest solution in the country to the problem discussed in the article, although the Southern Standard Building Code was not mentioned in it. Therefore, we must assume that the other three model building codes mentioned in the article have not obtained the same state of perfection in regard to requirements for exterior walls as has the Southern code, which has now been adopted by 462 southern cities and towns.

Incidentally, when he makes the statement that the city of Birmingham requires a 50-ft spacing with non-combustible exterior walls, Mr. Merritt certainly is in error, since Birmingham has adopted the Southern code.

You have served a real purpose in this article and we commend you highly for your efforts. But we feel that maybe you have not gone into the various phases of the building-code problem as you should have.

M. L. CLEMENT
Director
Southern Building Code Congress
Birmingham 3, Ala.

[EDITOR'S NOTE—Mr. Clement correctly calls attention to a misstatement about Birmingham in the article. The sentence should have read, "New Orleans permits incombustible panels of any thickness along streets only 30 ft wide, while Birmingham, Ala., requires 3-hour fire-resistance except on streets 50 ft wide, where 2-hour is permitted." The correction makes no change in the point of the article that codes differ on requirements for exterior panel walls for tall buildings.]

Another case of confusion

SIR: We Oak Ridge readers found Mr. Merritt's fine article, "Code confusion," (ENR Dec., 24, 1953, p. 21) most informative reading.

The confusion Mr. Merritt had reference to is not merely confined to building codes. Some years ago, it was my interesting assignment to aid an assistant city attorney in preparing a new code controlling the transport of explosives over city streets. By way of comparing our code with that

(*Continued on page 12*)

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• *Absolutely weatherproof.* Burns for 40 hours on 6 pints of kerosene—also burns #1 Diesel Oil. Gives a white light of 5000 c.p. and throws a beam about 150x75 ft. A fine light to have especially in emergencies when power is not available. Model F. L. 6 (left) is mounted on a 5 to 8 foot telescopic tripod with revolving base and weighs 60 lbs.—$90.00 F.O.B. Chicago. The model below is mounted on a short stand and weighs 38 lbs.—$72.50 F.O.B. Chicago.

Specifications

Projector dimensions — 14½" wide — 11½" deep — 26" high	
Dia. of Reflector	14"
Center of Refl. above ground—short stand	18"
Center of Refl. above ground—tripod stand	8' max. 5' min.
Weight of Projector without oil	22 lbs.
Weight of Projector with oil	28 lbs.
Weight of short stand	5 lbs.
Weight of tripod stand	34 lbs.
Capacity (sufficient for about 40 burning hours)	6 pts.

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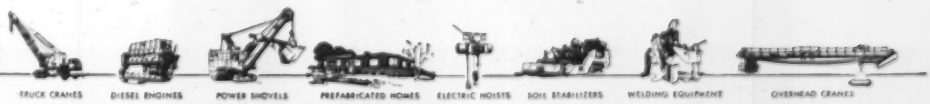

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READER COMMENT

of other metropolitan cities, information was obtained on the subject of explosives transport from them.

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PAUL C. ZIEMKE
Safety Engineer
Oak Ridge, Tenn.

Wrong fee given

SIR: In my article, "Prestressed roof girders set span record" (ENR Jan. 21, p. 36), the amount of the architectural contract for the Senior High School gymnasium in Greensboro, N. C., was incorrectly stated as $10,-150. It should have read 5% of the construction costs, which is standard for this type of building.

W. D. SHEA
Chief Engineer
Arnold Stone Co.
Greensboro, N. C.

CALENDAR

American Railway Engineering Association, Palmer House, Chicago, March 16-18.

1954 Midwest Concrete Exposition, Navy Pier, Chicago, March 18-20, sponsored by the Concrete Contractors' Association of Greater Chicago, 69 West Washington Blvd., Chicago.

Southern Municipal and Industrial Wastes Conference, N. C., State College, Raleigh, N. C., March 18-19.

American Congress on Surveying and Mapping, annual meeting and exhibit, Hotel Shoreham, Washington, D. C., March 22-24.

Rail Steel Bar Association, annual meeting, Jung Hotel, New Orleans, La., March 24-26.

American Power Conference, annual meeting, Sherman Hotel, Chicago, Ill., March 24-26.

Kansas Highway Engineering Conference, Kansas State College, Manhattan, Kan., March 25-26.

Ohio Society of Professional Engineers, Mayflower Hotel, Akron, Ohio, March 25-27.

Southeastern section AWWA, Poinsett Hotel, Greenville, S. C., March 29-31.

6th annual highway short course, South Dakota State College, State College, S. D., April 7-9.

Second International Congress on Irrigation and Drainage, Algiers, Algeria, April 12-17.

American Institute of Steel Construction, national engineering conference, Hotel Schroder, Milwaukee, Wis., April 13-14.

Society for Experimental Stress Analysis, Netherlands Plaza Hotel, Cincinnati, Ohio, April 14-16.

Annual Road School, April 19-22; and Conference on Road and Street Traffic Control, April 22-23, Purdue University, Lafayette, Ind.

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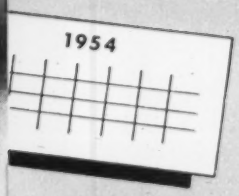

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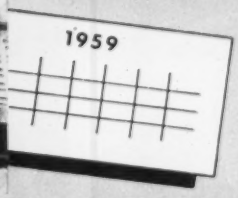

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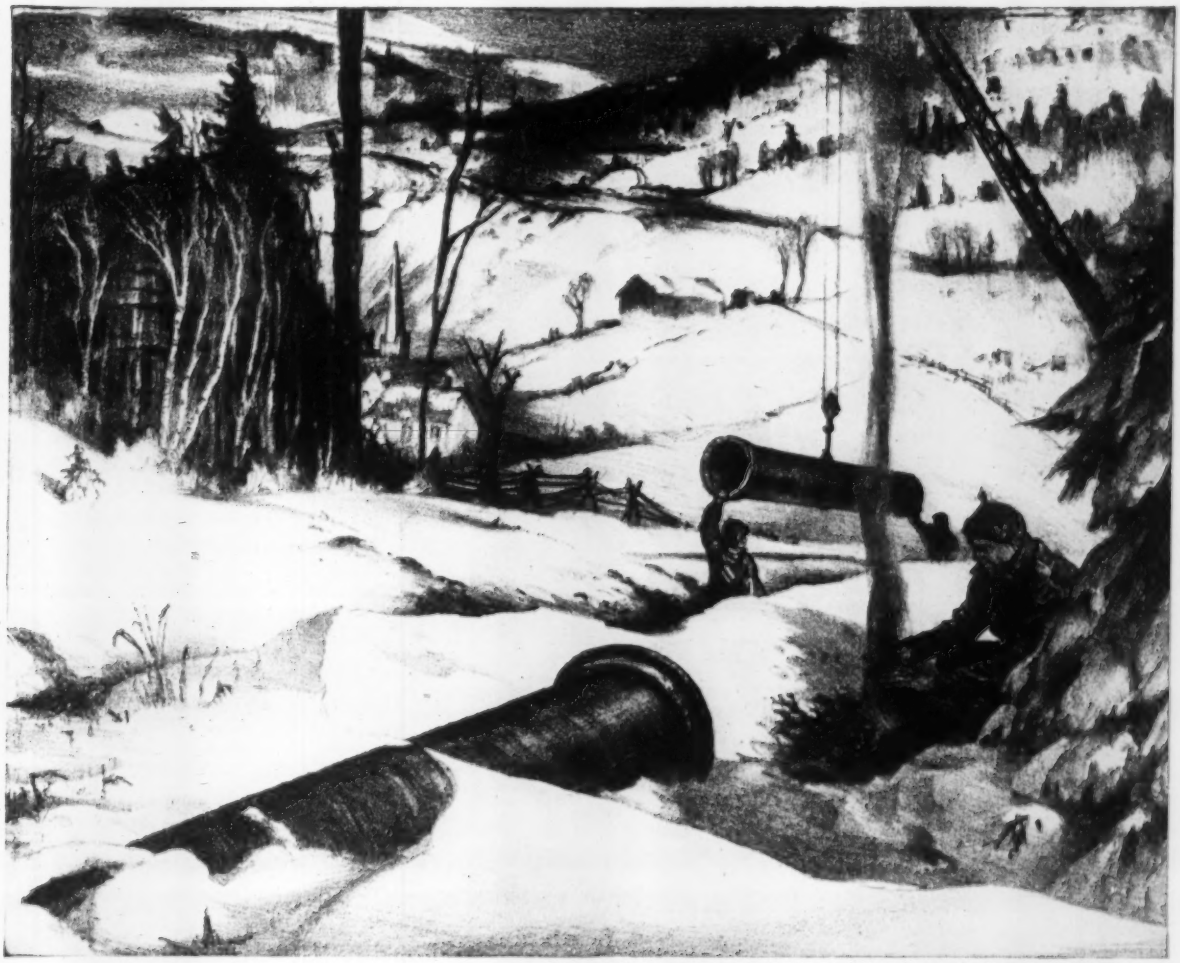

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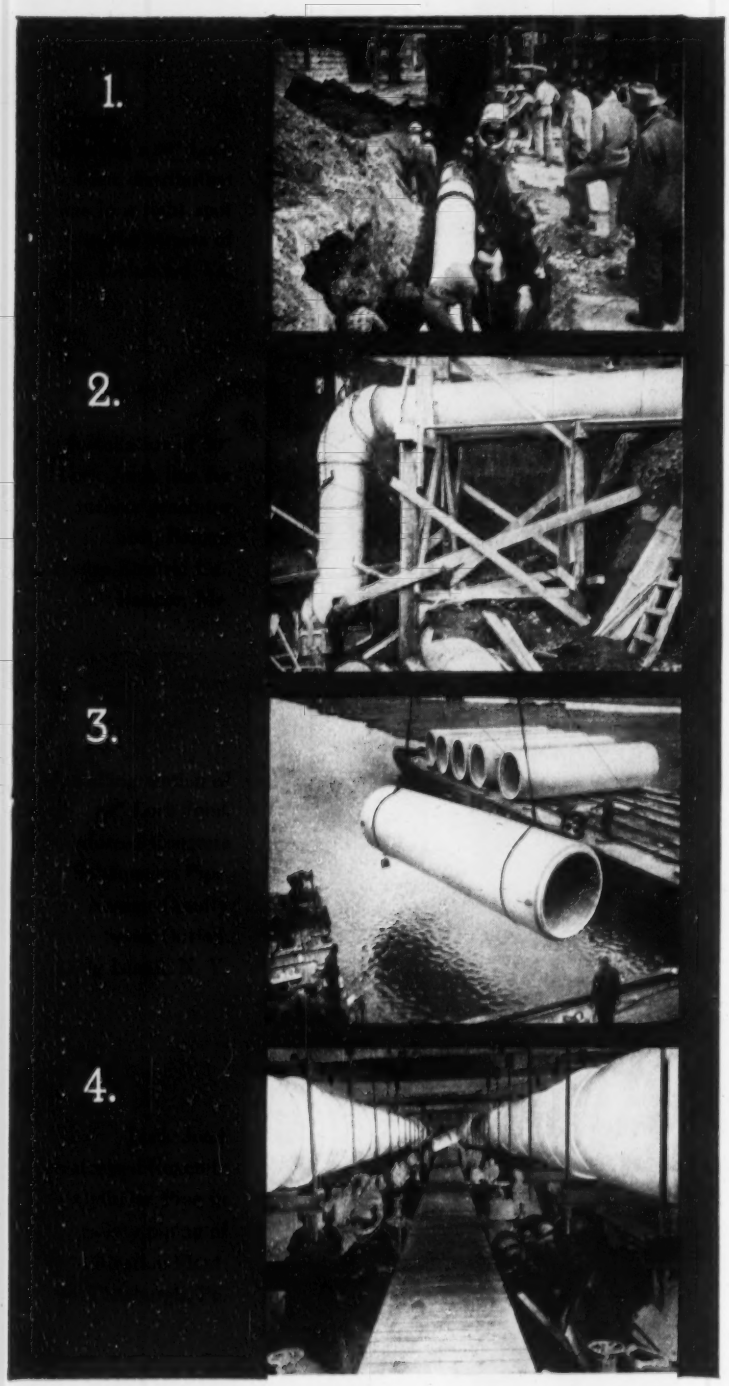

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THESE are some of the major services for which Lock Joint Concrete Pressure Pipe is ideally suited. So, if your pressure pipe problem involves pipe 16" in diameter or larger, call on Lock Joint – the low cost, high capacity, long lasting multi-purpose pipe.

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LOCK JOINT
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PRESSURE PIPE

Vol. 152, No. 10

NATIONAL AFFAIRS

Anti-slump planning: multi-pronged attack 21
CIB opens fight for better concrete 21
Chicago: future hub for toll roads, Mississippi Valley highway group told 22
AGC get optimistic forecasts on 1954 construction volume 23
New York City and private utility dedicate joint hydro 24
AFL gets go-ahead to enlist craftsmen in company unions 24
Waste treatment program adopted for Missouri Basin 24
Highway aid bill nears action by House 25
Supreme Court rules on two construction cases 26

LABOR

Battle is on between AFL crafts and industrial union 28

FEATURES

Key to regional water pollution clean-up 33
Moving the earthmovers 36

MUNICIPAL

New Jersey cities study bad water supply situation .. 49
Chattanooga's sign of progress—a $50-million improvement program 50

INTERNATIONAL

Who forms our competition overseas? 52

MEN AND JOBS

John MacLeod: one of the best-liked men in construction heads AGC 64

BUSINESS AND FINANCE

What's good for the client is good for the contractor 84
Equipment shipments drop sharply 86
Chrysler has spending plans to stay in auto sales race 86
Cost of typical frame house has climbed 150% since 1941 87
Activity this week 88

NEW PRODUCTS

"Packaged" aluminum igloo costs $4 per sq ft 101
British road danger lamp set for U.S. distribution .. 104
Tandem roller gets extra wheels for transportability 104
Opalescent finishes have high reflective qualities ... 104
Film Preview 106
Publications 107

Reader Comment 8
Calendar 12
Washington Observer .. 19
Books 51
Obituaries 68
Construction Reports 70
Unit Prices 83
Editorials 108

THE CONSTRUCTION WEEK

TROUBLE FOR TRUCKS—Ohio and Kentucky—embroiled in controversy among themselves and with truckmen over payment for use of highways—made more unpleasant news (for truckers):

Ohio's tax department said it had collected $2.9 million in axle-mile taxes in the first quarter of the year (so far), and has assessed truckers an additional $227,000 for delinquencies (while the truckmen fought the tax in courts).

Kentucky's Governor Lawrence W. Wetherby came up with a new tax plan under which he would agree to raise truck weight limits from the present 42,000 to 56,000 lb—if truckers would pay some $9 million more in taxes each year, under a revised tax schedule.

CLEARING HOUSE—NO. 2—A good idea gets fast acceptance. A week ago, the Dayton Builders' exchange announced establishment of a clearing house for construction bids (ENR March 4, p. 17) to give bidders a better chance to make plans, give owners better bids.

Comes now the Texas Associated General Contractors section, and the Texas American Society of Engineers section, with the announcement that a similar clearing house will be opened at Dallas, April 1.

Address: 610 Thomas Building, Dallas; name—Bid Opening Coordination Office.

NEW BAR—Construction men will want more details on a reported achievement of the Swedish Institute of Metal Research in developing an unalloyed bar with high strength and high yield point.

According to Stockholm engineer, Gabor de Kazinczy, the new bar (called H. E.—for high elastic) is cold worked by twisting and stretching. Initial twisting raises ultimate tensile strength; stretching raises the proof stress and elastic limit. Says de Kazinczy: The method permits the ratio of proof stress to ultimate strength to be adjusted between 0.8 and 1.0, with an optimal value (indicated by tests of reinforced concrete beams) of about 0.95.

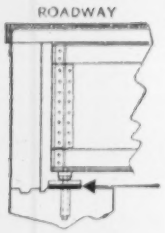
THE WEATHER—Here's the U. S. Weather Bureau's 30-day forecast for the month of March (to be read with the tables printed in ENR Feb. 25, p. 42):

Precipitation will be above normal for much of the country, including the Great Plains area. Precipitation will be above normal over the northern half of the country east of the Continental Divide, and in California; subnormal amounts are expected in the Gulf states and the Pacific Northwest. Elsewhere, near normal is anticipated.

Temperatures are expected to average above seasonal normals over the northeastern quarter of the U. S. and in the far Southwest, elsewhere, below normal is indicated.

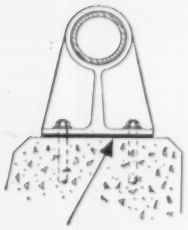
FABREEKA

ON HIGHWAY BRIDGES



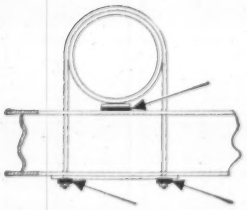
. . . Bridge Shoe Pads

Used as bridge shoe pads in highway bridges, Fabreeka effectively protects concrete foundations because it helps distribute loads evenly, absorbs impact shock and isolates destructive vibration, reduces maintenance and prevents chipping and flaking of concrete.



. . . Pads Under Hand Rails and Lights

Used as insulators under railing base plates and lights, these Fabreeka Pads assure a permanent bearing and greatly aid in the alignment of the railing. They prevent electrolytic action between steel and aluminum. Easily installed.



. . . Pads Under Water Mains

Used as supports under large water mains carried on bridges, these Fabreeka Pads isolate water pipes from the supporting structure, reduce the transmission of vibration and make proper alignment of the pipes easier.

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WASHINGTON OBSERVER

Tax legislation—including faster tax amortization—is up in the air. Congress is slipping and sliding under political pressure and the earlier schedule is getting sadly out of kilter.

This week the House was voting an excise tax bill including a proposal to continue the two-cent federal tax on gasoline to finance federal grants to states for highway construction.

Next week the House is planning to vote on the big tax revision bill including provisions to continue the corporate income tax rate at 52%, and a new provision to give businesses faster write-offs on new plant construction and equipment (including construction equipment).

•

But the House action isn't the last word by a long shot. In the Senate, the Democrats are backing increased deductions for dependents. Some insiders say, in fact, that there may be little left of the big revision bill when Congress gets through with it.

Most experts figure that faster tax amortization will stick in the bill though, even if other provisions are dropped wholesale. Reason: It really doesn't result in any loss of revenue to the government—and all hands agree, either privately or publicly, that the change is needed.

•

Bidders for construction of six experimental atomic plants are invited to get in touch with the Atomic Energy Commission's director of reactor development. That's the kickoff on the AEC's ambitious five-year program to find an economical commercial power plant, and to determine what kind of design is needed for out-of-the-way military electrical needs.

The five-year program: Four of the projects will be redesign and expansion of four existing experimental or power reactors. One will be a new type, using sodium-potassium alloy as a coolant and graphite as a moderator. AEC wants to find out whether this type can get more efficient high temperatures without extremely high pressures.

The "package" reactor for out-of-way military posts is being proposed at the request of the Army Corps of Engineers. The reactor will be based on a design drawn by the Oak Ridge National Laboratory. It will be let on a fixed-price contract basis.

•

Dispute over straight-time vs. overtime on federal construction was still boiling as of early this week. Top Labor Department and military officials met to find an answer to the controversy raised at the Little Rock, Ark., Air Force Base (ENR March 4, p. 19).

•

Engineers have given a go-ahead on $5 million to $6 million worth of paving contracts. Bids are now to be opened March 18—with no changes made in the contracts. Presumably, a contractor could bid under the same terms which raised the labor fuss: paying workers straight-time wages for a 56-hr work week.

Guessing was that the dispute might have to go to the White House eventually.

•

The wounding of Rep. Ben Jensen by the Puerto Rican terrorists has held up House Appropriations Committee approval of the Interior money bill. Jensen is chairman of the subcommittee handling the program. So, the Army civil functions appropriations, now being cleared by the full committee, will be up next in the House.

Reports are getting around that the Budget Bureau has in the works an additional $1 billion in public works to put up to Congress if the signal is given to go ahead on anti-depression measures. This would include a speed-up on the Upper Colorado River storage project as well as a bigger list of flood control and navigation projects.

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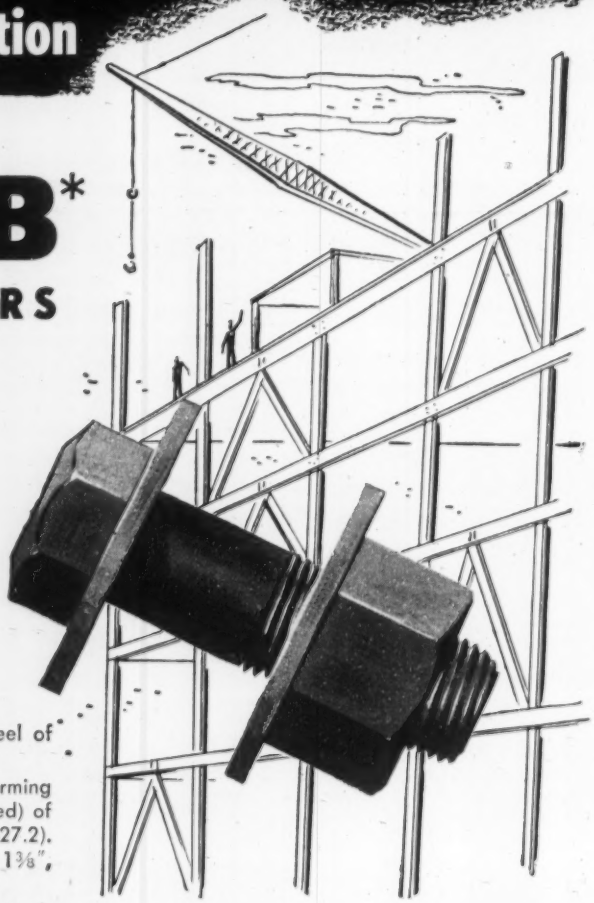

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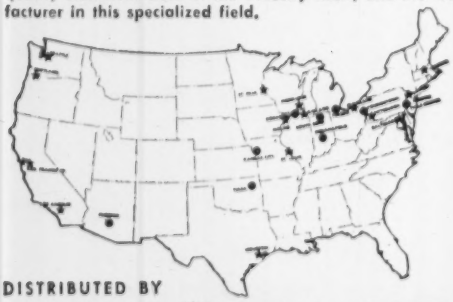

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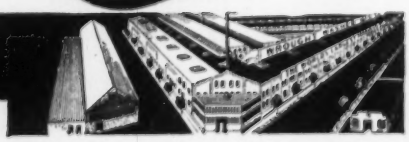


Anti-slump planning: new multi-pronged attack

Administration to rely mainly on local and private enterprise but would meet emergency with federal maintenance program, speed-up of current and budgeted construction

Elsie Eaves
Manager, Business News Department

If the Eisenhower Administration is forced to take anti-recession measures, it is now certain that construction will play a far different role than in the days of the Roosevelt alphabetical agencies.

An ENR interview with Robinson Newcomb, the Administration's top economic advisor on construction, last week revealed the broad outlines of a new approach to the use of public works as an antidote to recession: In its initial phase, federal emergency action would be limited to:

1. Launching a nationwide repair and rehabilitation program of federal buildings and facilities and of federal-aid highways.

2. A speed-up in the construction schedule on federal projects and, as needed, appropriations for jobs already authorized.

• **Changed philosophy**—Mr. Newcomb, a member of the Council of Economic Advisors, last week confirmed previous indications that this Administration does not plan to make direct public works pump-priming the pivot of any anti-recession program that it may be forced to undertake.

The new concept rates construction activity as a vital factor in combating a business downturn, but wants it to be sustained by private demand. To this end, it plans to take a number of vital steps for bolstering the economy as a whole—primarily fiscal and tax measures designed to boost consumer spending and capital investment along a broad industrial front.

• **Maintenance program**—If faster results are needed, Washington planners see in a federal rehabilitation program the quickest means of providing a high rate of employment per dollar spent. This work would proceed while plans for new projects were being updated or completed. It would eliminate any slowdown while waiting for completed planning.

The marked growth of the federal establishment since the '30's together with a heavy accumulation of deferred maintenance work during the war and postwar years provides a substantial number of construction job opportunities. And a general maintenance program also would have the advantage of being widely distributed geographically.

• **Federal projects**—The administration is now engaged in a critical analysis of construction projects, budgeted and authorized, for the purpose of rating them as to their effectiveness for pump-priming purposes. Current projects are being examined from the standpoint of how much additional labor could be employed if construction schedules were stepped up. Authorized projects are being re-evaluated on the bases of labor potential, starting time and relative urgency of need.

Some experts in Washington have estimated that the federal government could increase its current construction spending by as much as 50% over a 12-month period on current and authorized work.

• **Local public works**—Washington planners have realized that it would be difficult for the federal government to avoid heavy public works pump-priming commitments if local governments were unable to sustain a reasonable volume of capital improvements. They realized, too, that the most urgent public works needs exist on the local level and that if the municipalities couldn't hold up their end, there would be pressure for federal aid from this source.

To find out how well off the municipalities are for sustaining a high level of capital improvements, the President's Council of Economic Advisors had a survey made by the Municipal Finance Officers Assn. Information on capital improvement programs and financing capabilities was obtained from 141 U.S. cities.

• **Survey highlights**—Results of the survey—in which the International City Managers Assn., the American Society of Planning Officials and the American Municipal Assn. also participated—exceeded the hopes of the federal planners. Among the findings were:

• Over the next five years the 141 cities will spend $4.8 billion for public improvements—about one-fourth of it this year.

• There is sufficient borrowing margin for their planned improvement programs.

• Most cities already own or control the land needed for planned programs.

The survey developed that cities are tending to favor full or partial pay-as-you-go financing of capital improvements.

Of the almost $5 billion to be spent by the 141 cities over the next five years, general obligation bonds will finance more than half the sum. This form of financing is more prevalent among cities of over 100,000 population, while revenue bonds are more often chosen by cities under 100,000.

CIB opens fight for better concrete

A program aimed at up-grading concrete construction was adopted by the directors of the Concrete Industry Board of New York City March 8. If implemented, it will affect the practices of everyone engaged in concrete construction in the New York metropolitan area—material suppliers, testing laboratories, architects, engineers, contractors and building-code writers.

The program will be presented to the members at a meeting tentatively scheduled for April 26.

The Concrete Industry Board, which has a membership of about 200, was formed two years ago for the specific purpose of improving the quality of concrete construction in the New York area. Many of its founders believed that, while existing professional societies had developed and disseminated good practice recommendations, an organization was needed to enforce their adoption. Since its formation, the CIB, through discussions at its regular meetings, has been evaluating the factors that affect the quality of concrete and has been bringing problems into the open. The program approved this week is the first important step the CIB has taken to stimulate up-grading of concrete construction.

• **Voluntary compliance expected**—Im-

plementation of the program depends on voluntary cooperation of the people in the industry and also upon results of studies that are scheduled to be made.

Included in the program are eight significant recommendations:

1. Certification of all testing laboratories concerned with concrete construction as to adequacy of facilities and personnel.

2. Establishment of standards for facilities and personnel of ready-mix plants, with a view toward certification of concrete by the producers.

3. Establishment of a code of ethics for the concrete industry to which all members of the CIB must subscribe. Work should start immediately on a code of ethics for contractors.

4. Steps should be taken to amend the city building code by eliminating "average" concrete for use in reinforced concrete and requiring all reinforced concrete to be "controlled" concrete under the supervision of the architect or engineer who designed the structure.

5. Members should be kept informed of changes and proposed changes in the city building code.

6. Establishment of a committee to handle grievances and complaints in connection with violations of codes of ethics, certifications and performance.

7. Study should be made of certification of concrete inspectors and contractors' superintendents.

8. Evaluation of properties of Portland and natural cements used in the New York area.

To plan and supervise the program Roger H. Corbetta, of the Corbetta Construction Co., president of the CIB, appointed an action committee consisting of Elliott Haller, vice-president, Haller Testing Laboratories, chairman; William Eipel, consulting engineer, Tuck & Eipel; Elliott Harris, of Metropolitan Sand & Gravel Corp.; John Hogan, of the Portland Cement Assn.; Frederick S. Merritt, Associate Editor, ENGINEERING NEWS-RECORD; and Mr. Corbetta.

New Delaware River span allowed by bond purchase

Resolutions of the Burlington County Bridge Commission (N. J.) to permit New Jersey and Pennsylvania Turnpike authorities to plan for a new Delaware River span—linking the toll roads—have been given a green light. By investing in the commission's outstanding bridge bonds, six Philadelphia banks, lifted the restriction on building another span within 10 mi of the present Burlington-Bristol bridge.

Chicago: Future hub for toll roads, Mississippi Valley highway group told

Chicago was pictured as the center of a system of cross country toll roads and interregional expressways in discussions held last week in the Windy City at the 45th annual meeting of the Mississippi Valley Conference of State Highway Departments.

Engineers from the 14 state highway departments represented at the conference stressed the part toll highways will play in the development of their interstate systems. The toll road solution of highway transportation problems and the fact that they are coming to the Midwest much faster than was thought possible a year ago was accented in panel discussions.

• **Need correlated planning**—This fast-growing toll road movement presents to the Midwestern highway departments the problem of correlating their interstate highway construction with projected toll roads.

"Although the thinking and planning of highway engineers always will be dedicated to the principle of free roads for all people," said Carlos A. Weber, assistant chief engineer, Michigan State Highway Department, "we cannot afford to spend large sums of money on constructing interstate highways that will be in direct competition with future toll highways." On the other hand, he declared, "we cannot afford to delay too long the improvement of such strategically important routes on the mere chance that some day a toll road will serve the same area." Weber urged his fellow highway engineers to strive for a correlation of interstate and toll highway planning that would provide adequate facilities and avoid duplication of construction funds and effort.

T. J. Kauer, chief engineer, Ohio Turnpike Commission, predicted that within the next few years we will have a continuous 812-mi toll route from New York to Chicago. "Within the next decade," he said, "This network of toll roads may extend from Augusta, Me., through New York and Chicago and northwest to Minneapolis, southwest to St. Louis and west across Illinois, Iowa and into Nebraska."

The eastern section of Indiana's east-west toll highway connecting with Ohio's first toll road will be in operation late next year, said Albert J. Wedeking, chairman Indiana State Highway Commission. He said he hoped the route will be finished to Chicago by 1957.

• **Two highway needs**—Resolutions adopted at the closing session point up significant needs of Mississippi Valley highway departments. (1) They endorse the proposal now before Congress for using federal aid highway funds to pay for moving utility installations where necessitated by highway construction. (2) They contend that present requirements for providing horizontal and vertical clearances of bridges over inland waterways are excessive, and they want permission to reduce them to cut construction costs.

• **AGC is optimistic**—In an unscheduled impromptu talk at the conference A. N. Carter, of the Associated General Contractors, assured the highway engineers that the contracting industry has ample capacity for handling larger highway programs.

He called attention to the fact that last year the national average of bids submitted on federal aid highway work was 6.6 bids per project with some projects drawing 32 contract offers.

• **New officers**—M. P. Wynkoop, chief engineer, North Dakota State Highway Department, was elected president of the conference succeeding L. N. Ress, Nebraska State Engineer. H. C. Rempfer, South Dakota State Highway Engineer, was elected secretary-treasurer.

Dewey names Moses head of state power agency

The versatile Robert Moses has a new hat to wear. This one, labeled chairman, New York State Power Authority, goes on a shelf with others marked City Construction Coordinator, City Park Commissioner (his only paid job), Triborough Bridge and Tunnel Authority Chairman, Long Island State Park Commissioner, City Planning Commissioner.

In naming Mr. Moses, Gov. Thomas E. Dewey picked his man to wage the battle against private power interests and for state development of available power potential at Niagara. Moses was to testify at a Senate Public Works Committee meeting earlier this week in Washington.

Announcement of the Moses selection also made known that John E. Burton, vice-president of Cornell University, had asked to be relieved of the chairmanship of the authority but would remain as a member; Elliott V. Bell, editor and publisher of Business Week, had asked not to be reappointed. Both gave as reasons the press of other duties.

AGC gets optimistic forecasts on 1954 construction volume

Pending federal legislation and contracting procedures undergo examination at general contractors' convention

If forecasts hold true, 1954 will be the second biggest year in construction history, H. E. Foreman, managing director of the Associated General Contractors of America, told the organization's 35th annual convention in Los Angeles last week.

Along with appraising the construction outlook, AGC formulated its official position on pending federal legislation of interest to general contractors. It backed measures that would increase federal highway aid, reiterated its firm opposition to legislation that would require naming of specialty subs and the amounts of their bids, and renewed its plea for a law providing for judicial review in federal contract disputes.

• **Confidence is keynote**—The confidence expressed by Mr. Foreman that '54 would prove another big year for construction was echoed by Secretary of Labor James P. Mitchell, whose address was presented to the convention by means of a film.

U. S. Steel's president, Clifford F. Hood, told the group that 1954 might even set a new high. This observation was based on the fact that predictions are nearly as high as the record 1953 volume. Hood recalled that advance estimates have been low in recent years and may well be low again. Richard J. Gray of the AFL agreed that volume would be large, but he made reservations. He said that Congress needs to speed action on legislation relating to aid for highways, schools and housing as well as to speed appropriations for national defense construction, reclamation, hospitals, and public power projects.

An AGC survey of its 6,500 members spotlighted volume trends in specific types of construction. The members predicted an increase in highway and building construction, but looked for decreased amounts of heavy construction during the next six months. In commenting on this survey, Mr. Foreman mentioned three factors that will or can favorably influence the construction outlook—increased public works by the federal government as a recession antidote, use of accelerated depreciation of structures and equipment, and the approval by voters of a large number of state and local public works projects.

• **Legislation**—A number of pending legislative matters were considered and acted upon by the contractors. Following a talk by A. E. Johnson, president, American Association of State Highway Officials, outlining that organization's recommendations for increased federal aid for highways, the convention adopted a resolution that "the federal government assume its proper responsibility for the nation's highway needs by increasing federal aid returns to the states of not less than $900 million annually."

A panel of state highway engineers, in discussing this proposition, agreed that the states would be able to find the money to match such an increased federal appropriation, but several were of the opinion that some states might encounter a bottleneck in preparing plans because of inadequate personnel. To alleviate this latter condition the AGC urged its members to cooperate with the ASCE and others "in seeking salary scales of engineers in public service which are commensurate with their responsibilities."

• **Bid shopping issue**—The pending legislation that received most attention was that being pushed by subcontractors, principally in the building trades, to require general contractors to name their proposed mechanical specialty subs and the amounts of their bids when bidding on federal public works. The AGC has opposed this legislation on the ground that it would not accomplish its alleged purpose since the matter is one of business ethics and not of law. If both general contractors and subs would adhere to the AGC code of conduct, the bad practices charged—principally the use of one sub's bid to obtain a lower proposal from another—would disappear automatically. The AGC's recommendation is that its local chapters cooperate with local subcontractor associations to make sure of the observance of the code of ethical conduct by all parties concerned. Legislation, it believes, would merely decrease competition on subcontracts, and since it would apply only to federal public works, it would affect only a small part of the problem. One suggestion is to develop a new bid form, based on the code of ethical conduct, which general contractors can use in inviting bids from subcontractors.

The AGC also reiterated its previous views on legislation relating to the so-called Wunderlich case. Legislation is necessary, it holds to "establish by law, beyond the possibility of doubt, the fundamental principle of American justice that the parties to a contract with the federal government have the right of judicial review of disputes which arise."

• **For increased efficiency**—If large construction volume is to be handled with speed and efficiency, there are a number of procedural problems that must be solved. Thus, the AGC took a dim view of the proposal of the Federal Communications Commission to limit contractors in their use

CONSTRUCTION may set a new high in 1954, Clifford F. Hood, president of U. S. Steel Corp., tells AGC. New and past presidents of organization are seated at right.

of mobile and fixed radio units. The use of radio has become standard practice on many jobs, and the AGC charges that it's discriminatory to single out the construction industry as the only one to be limited in the use of this rapid means of emergency communication.

• **Joint task committees**—It was noted that efficiency has been promoted through the use of joint task committees of the AGC, and of other associations and federal agencies. For example, according to George H. Atkinson, chairman of AGC's contract forms and specifications committee, the work of this group has saved the Bureau of Reclamation $100 million during several years by the elimination of unnecessary requirements.

Brig. Gen. C. H. Chorpening, Assistant Chief of Engineers for Civil Works, also lauded task committee work as improving cooperation and effectiveness of Corps of Engineers and AGC operations. General Chorpening also asserts that by learning Corps of Engineers regulations and procedures on civil works, contractors are better able to undertake the enormous task of mobilization and wartime construction.

A banker, Robert L. Gordon, a vice-president of the Bank of America, urged the contractors to keep down overhead in both people and equipment. Some firms, he claimed, take work on bids so low as to allow no margin for error just to provide work for "dead-head personnel," and other firms become "equipment happy" resulting in the undertaking of unprofitable jobs just to earn depreciation on equipment they had "no business owning in the first place."

A resolution urged management and labor to hold the line on wages by avoiding further unwarranted increases. The recommendation pointed out that wages paid in construction have increased commensurately with increases in the cost of living and labor's contribution to productivity. The resolution also warned against adoption of welfare plans that are not suitable to the industry and which cannot be administered to workers fairly and equitably.

• **New officers**—John MacLeod, president of the Macco Corp., Paramount, Calif., was installed as AGC's new president (see page 64), succeeding C. P. Street of McDevitt & Street, Charlotte, N. C.

George C. Koss, president of Koss Construction Co., Des Moines, Iowa, assumed the duties of vice-president, the office held last year by Mr. MacLeod. William Muirhead of Durham, N. C., continues as secretary-treasurer.

Partnership

City and private utility dedicate joint hydro

Dedication of a 25,000-kw, single-unit hydro plant on Neversink-Rondout tunnel of New York City's Delaware water supply system last week marked consummation of a unique city government-private utility partnership in water use.

In dedicating the $3.9-million hydro unit—capable of serving some 40,000 of his customers—Central Hudson's president, Ernest R. Acker, extolled the cooperation between city government and business that had brought it to fruition. Negotiations between engineers and lawyers of the power company and the city's Board of Water Supply began in 1944, when right to divert Rondout Creek was acquired by the city.

The company filed for damages in the amount of $2.5 million at that time. But thanks to the agreement finally written, the city—instead of paying damages—will collect $50,000 annually from the company for water used in excess of a minimum supplied without charge. The company—instead of damages—gets without charge water enough to generate 30,000,000 kwh annually and has the right to run the 48,000,000-kwh plant for 50 years. Then it is to be turned over to the city.

The Department of Water Supply, Gas & Electricity, which operates facilities built by the City's Board of Water Supply, will control flow through the tunnel to permit the hydro plant to operate at full capacity during periods when demand is at its peak.

Called Neversink Hydroelectric Plant, the red-brick station stands in a field between two hills at Grahamsville, N. Y. Flow up to 105 mgd comes out of one hill in a 10-ft dia, five-mile tunnel from Neversink reservoir; it enters the other hill for another 2,300 ft of flow to Rondout reservoir. But in the open field—with not a drop of water in sight—the subterranean flow's 550-ft head is at work; and a stainless steel runner is spinning out the power.

AFL gets go-ahead to enlist craftsmen in company unions

AFL building trades unions got the green light from the new National Labor Relations Board to go after skilled construction craftsmen now organized into plant and company-wide industrial unions.

The stamp of approval by the labor agency came in a policy ruling involving the American Potash Co., Trona, Calif., and six unions. This decision permits craft unions to bargain separately for the company's electricians and powerhouse employees, while the remaining production and maintenance employees may be bargained for on a plant-wide basis.

The three-to-one board majority—led by Eisenhower-appointed Chairman Guy Farmer—says the NLRB will henceforth look favorably upon any efforts by craft unions to carve out units of "true craft" employees.

AFL construction officials particularly want to break down the "no contracting out" provisions held between unions and management that would prevent subcontracting for building and maintenance work. Since this work can't be done by an outside contractor, the craft unions will attempt, more than ever, to take over workers of their crafts within those plants.

Waste treatment program adopted for Missouri Basin

Last week the Public Health Service unveiled a $186-million program of waste treatment facilities at 893 locations to clean up stream pollution in the Missouri River Basin.

The totals were listed in a report developed cooperatively by the Missouri Drainage Basin office of PHS and the water pollution control agencies of each of the 10 states in the Missouri Basin.

These combined programs have been approved by Surgeon General Leonard A. Scheele as constituting a comprehensive basin plan, meeting requirements of the Federal Water Pollution Control Act. The action makes the Missouri Basin the first major basin in the United States to complete Step 2 under the federal act. Step 1, cooperative local-federal pollution studies on which to base recommendations for control, has been completed for all the 15 major basins.

Surgeon General Scheele noted that "obviously the mere adoption of this program will not, in itself, reduce pollution or improve the usefulness of the waters in the Missouri River Basin."

The report lists 643 municipal and 250 industrial project needs. As broken down, they are: municipal—319 new plants, 146 replacements, 82 additions and 96 enlargements; industrial—172 plants, 38 replacements, 26 additions and 14 enlargements.

The basin has 1,073 municipalities, institutions or sanitary districts whose discharge is estimated at a population equivalent of 4,890,000. In addition, 332 industrial outlets contribute more than 10,000,000 population equivalents.

Highway aid bill nears action by House

Federal contract judicial review measure clears House committee; Niagara power and housing hearings continue

Construction legislation, off to a slow start, has begun to move through Congress. Highway and hospital construction bills were due for House passage this week, while a half dozen other measures were moving through committees in both House and Senate.

• **Gas tax retention likely**—Quick House approval was predicted this week for the modified McGregor Bill authorizing $800 million a year of federal highway-aid for fiscal 1956-57. The bill provides $600 million a year of regular federal aid plus $200 million for the interstate system (ENR Feb. 25, p. 27), with the interstate funds dependant upon continuation of the 2 cents federal gasoline tax.

Little trouble was expected in the House over retention of the 2 cent tax, which would drop 1½ cents April 1 if Congress doesn't act. The Ways & Means Committee had approved the 2-cent levy as part of its excise tax bill, and GOP leaders predicted endorsement by the House this week.

• **McGregor Bill amendments**—The highway bill reported to the House by its Public Works Committee contained two significant revisions of the original McGregor measure; (1) approval of the federal-aid secondary project and of the standards applying to those projects would remain subject to the authority of the Secretary of Commerce—and consequently of the department's Bureau of Public Roads—on practically the same basis as now; (2) the matching ratio for interstate system projects would be changed from the 50-50 cost sharing arrangement to the new basis of 60% federal and 40% state payment for these jobs.

Retained in the bill were two other McGregor proposals which have been warmly debated; (1) that interstate funds be apportioned to the states half on the basis of the existing formula (area, population and post-road mileage) and half on a basis of population alone; and (2) that the Commerce Secretary study the problem of utility relocation on federal aid highway projects and the possibility of paying for those relocations.

To finance federal highway aid under present law for the fiscal year starting July 1, the House Appropriations Committee last week approved $500 million. That sum is $75 million less than at present authorized and recently requested by the President in his budget message. But the committee thought $500 million might be enough to meet federal obligations to the states, depending upon how fast the states complete their federal-aid projects. If more should be needed, Congress could pass a supplemental appropriation.

• **Judicial review bill**—S. 25 to provide judicial review from decisions of government contracting officers was favorably reported after being amended by the House Judiciary Committee. The bill passed the Senate last session and will now go on the consent calendar, which means it is likely to pass the House momentarily.

The major change in the bill is that the reference to the Comptroller General, which appeared in the Senate version, was deleted. The Defense Department and a number of defense contractors had taken the position that the Senate version might be interpreted to give the Comptroller General equal status with the courts in the review of cases appealed from Decisions of contracting officers.

The legislation stemmed from the Supreme Court decision in the Wunderlich case in which the court held that appeal could be made only in cases where fraud was alleged. The decision prevented review of cases on the basis that they might have been arbitrary or capricious.

The legislation, as it now stands, would provide for court review in cases where it was alleged that the contracting officer had been arbitrary, capricious, had made gross mistakes, or that there was substantial evidence that his decision had been unjust.

Only opposition to the bill in its present form came from the Associated General Contractors who prefer the Senate Bill. (see page 24 on AGC convention stand). However, House Judiciary Committee members do not believe that there is any substantial difference between the House and Senate versions and that satisfactory wording can be worked out in conference.

• **Hospitals**—The House leadership predicted quick approval for hospital construction legislation, due to be taken up on House floor this week. The bill, which has Democratic support, would expand the Hill-Burton Act by authorizing $60 million a year for three years for non-profit diagnostic centers, hospitals for the chronically ill, rehabilitation centers and nursing homes.

• **Niagara power**—The Senate Public Works Committee this week began its delayed consideration of Niagara power legislation. Four bills are pending before the committee, one to provide construction of power facilities on the Niagara River by five private power companies in New York State. This bill passed the House last session and is believed to have more backing in the Senate than any of the three remaining bills, all of which would provide development of the power by the New York State Power Authority. This is being strongly pushed by Governor Dewey.

• **Housing**—The House Banking Committee last week completed its first week of hearings on housing legislation, getting the views of HHFA Administrator Albert Cole, and other government housing officials.

Congressional scoreboard

Here is a report on major construction legislation now before Congress. This ENR service, charting the course of these and other measures yet to be introduced, will be published periodically. Status of the bills is traced by the following symbols: H—House of Representatives; S—Senate; i—introduced; c—in committee; r—reported on the floor; p—passed.

St. Lawrence Seaway	Sp Hc
Niagara power project	Hp Sc
Omnibus rivers & harbors & flood control authorization	Hc
Omnibus Housing (FHA, FNMA, public housing, etc.)	Hi Si
McGregor highway aid	Sp Hr
Case highway aid	Sc
Judicial review of contract disputes (Wunderlich case)	Hr Sp
Bid shopping	Sr
Lease-purchase of public buildings	Sr
Upper Colorado Basin development	Hc
Santa Maria project	Hp
Reclamation projects over $5 million (to be made subject to congressional approval)	Hp
Convalescent Hospital Bill	Hr Sc

Utah AIA, AGC chapters to form "abuse" council

Seeking to end business abuses Utah architects and general contractors were meeting, this week to form a "Utah construction industry council." Sponsored by regional chapters of the American Institute of Architects and the Associated General Contractors of America, the council would provide a means of threshing out, in private, disputes that arise over price cutting, hiring policies and similar matters.

Supreme Court orders antitrust trial; rules out Davis-Bacon wage guarantee

The Supreme Court this week slapped down the legal arguments of contractors in three cases by ruling:

1. That two related monopoly cases filed by the Justice Department against a group of Chicago lathers and plasterers trade associations and building trades unions must go to trial; and

2. That the Davis-Bacon minimum wage specification included in government contract bids is not a guaranteed wage ceiling for contractors.

Both these rulings upset lower court decisions won by the contractors involved. The Employing Lathers Assn. of Chicago, Local 74 of the AFL Wood, Wire, and Metal Lathers, the Employing Plasterers Assn. of Chicago and Local 5 of the AFL Journeymen Plasterers will now have to defend in court against conspiracy charges filed by the Department of Justice under the Sherman Antitrust Act.

Charges by the department that the contractors and unions conspired to monopolize lathing and plastering in Chicago and restrain interstate commerce were dismissed before going to trial by a district court last summer. Reason: The conspiracy was limited to "rendering local labor services" and it had "too remote and conjectual an effect on interstate commerce" to amount to a Sherman Act violation.

But the Supreme Court, in a 7-2 decision written by Justice Hugo L. Black, ruled the dismissal was error and ordered a trial of the charges. Black said the court was not impressed with the contractors' argument that the Sherman Act could not apply because interstate buying, selling and movement of plastering and lathing materials had ended before the local (Chicago) restraints went into effect. The majority ruled the government must be given the opportunity to prove that the local restraints did cause unreasonable burdens on the flow of building materials into Illinois.

The decision still does not put the Supreme Court on record as saying that such restrictive practices in the building industry violated the Sherman Act. But it definitely points that way; and additional antitrust cases in the industry may well follow the pattern being set in the Chicago prosecutions.

Chief Justice Earl Warren wrote the court's unanimous decision that a contractor cannot collect from the government for the difference between what the government says are prevailing wage rates in its bid advertisements and the higher rates the contractor actually has to pay for such labor.

The 9-0 ruling reverses a decision by the U. S. Court of Claims, which made such an award to the Binghamton Construction Co. in 1941. Binghamton, relying on a rate specifying that carpenters were getting $1.00 and laborers 50 cents an hour, submitted and won a bid of $232,669 for construction of a flood project on the Chemung River at Elmira, N. Y.

Actually the information was incorrect and union carpenters and laborers were getting—and Binghamton paid—$1.25 and 62 cents an hour. The Court of Claims, allowing recovery for the difference, held that the government had falsely represented that prevailing rates in Elmira.

Chief Justice Warren, however, said the Davis-Bacon Act, which requires that wages paid on government construction projects must be "not less" than "minimum wages" specified by the Secretary of Labor, was not enacted to benefit contractors, but rather to protect their employees. Thus the Secretary of Labor is directed to determine, on the basis of "prevailing rates" in the locality, minimum wages for each project. Basically, Warren said, Davis-Bacon is a minimum wage law and provides no assurance to a successful bidder that the specified rates will in fact be the prevailing rates.

This decision disposes of only part of the litigation.

Women engineers group holds annual convention

The Society of Women Engineers, meeting for its annual convention in Washington, D. C., last week heard Dr. A. V. Astin, Director of the National Bureau of Standards, define the shortage of engineers and prescribe ways and means of increasing their numbers.

The society is working to meet part of this need by advising students, by counseling women skilled in science and mathematics to study engineering and advance their technical proficiency.

Four new professional sections and a new student section were organized. The professional sections are at Bridgeport, Conn., at Denver, Colo., Kansas City, Mo., and Cleveland, Ohio. The new student section is at Drexel Institute in Philadelphia. Existing sections represented at the annual meeting in Washington are at Boston, Chicago, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh and Washington, D. C.

Bridges, skyscrapers feature in architectural awards

The National Gold Medal exhibition of the Architectural League of New York gave its top engineering award to Thomas C. Kavanagh's and Camilo Piconne's design for the Rio Blanco Bridge near Veracruz, Mexico (ENR Feb 25, p. 46). Second award in the engineering field went to Hardesty & Hanover, New York, for their S. E. Fourth Avenue Bridge over the Miami Canal, Miami, Fla. (ENR March 13, p. 53).

In the architectural section of the competition, first award went to Skidmore, Owings & Merrill, New York, for the glass-walled Lever House (ENR May 1, 1952, p. 79).

Job highlights

TACONITE PLANT—General construction contract for a $300-million taconite plant at Aurora, Minn., has been awarded to Foley Brothers, Inc., Pleasantville, N.Y., by the Erie Mining Co., Cleveland, Ohio.

JET AIRPORT DESIGN—Flight aprons, a $10-million hangar, and ancillary facilities for a jet bomber airport at Moses Lake, Wash., will be designed by architects-engineers by Naramore, Bain, Brady & Johanson, Seattle, Wash., for the Boeing Airplane Co., under an Air Force program.

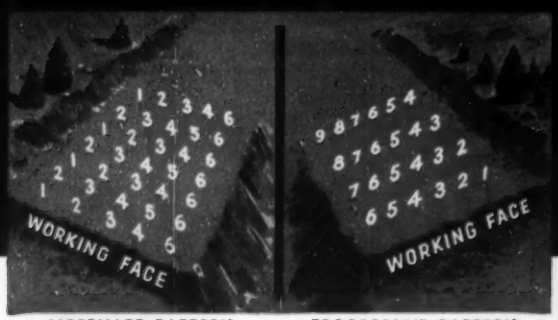
JUNGLE RAILROAD—To connect the Serra do Navio manganese deposits in Amapa, Brazil, with Macapa, on the Amazon River, a 135-mile railway and port facilities will be built by Foley Brothers, Inc., Pleasantville, N. Y., for the Brazilian government. Total cost of the project will be $67 million.

PAPER MILL ADDITION—To house two new paper machines, additional mill facilities at Everett, Wash., will be built by Howard S. Wright & Co., Seattle, and American Pile Driving Co., Everett, Wash., for the Scott Paper Co. Total cost will be about $10 million.

SHOPPING CENTER—A $35-million shopping center at Hempstead, N. Y., will be designed by Skidmore, Owings & Merrill, New York architects, for Webb & Knapp, Inc., N. Y. Severud-Kreguer, N. Y. are structural engineers, and Syska & Hennessy, Inc., N. Y., are mechanical engineers.

See also Construction Reports page 70

Throw controlled... breakage good



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This side-hill cut is one of many that was blasted by the Morrison-Knudsen Co., Inc. and Ralph E. Mills Company through the rugged terrain of West Virginia for the new West Virginia Turnpike. By using a ROCKMASTER pattern the contractor obtained maximum breakage and controlled throw. The rock was blasted toward the up-hill slope . . . not scattered into the valley below.

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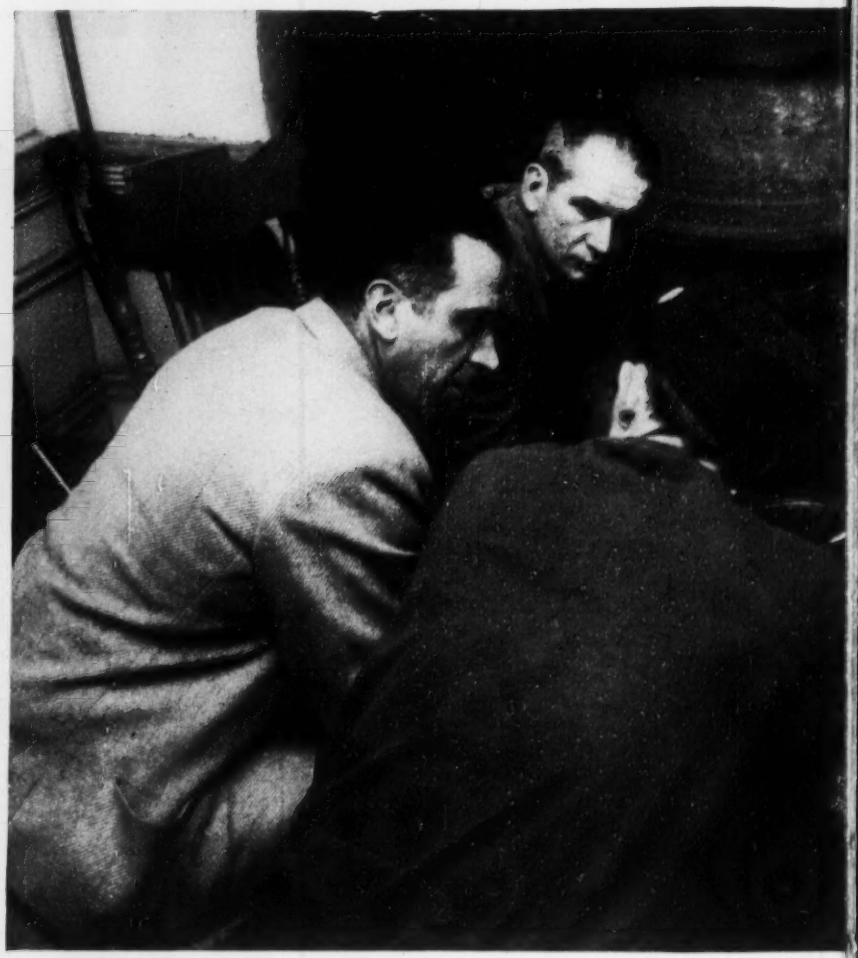
THE JOB—UCW cardholder drills for roof bolt in diversion tunnel. Many workers on dam hold AFL cards too.



THE WORKERS huddle after union meeting in Sinnamahoning, Pa., to discuss UCW Guarino, left. Sam moved among members, passing out beer and explanations about coming employment falls, and AFL building trades, also feeling work pinch, are fighting back.

Battle on between AFL crafts and

G. T. Orick
Assistant Editor

Four construction unions of the American Federation of Labor met the United Construction Workers—a United Mine Workers offshoot—head-on in a little village in the mountains of Pennsylvania last week.

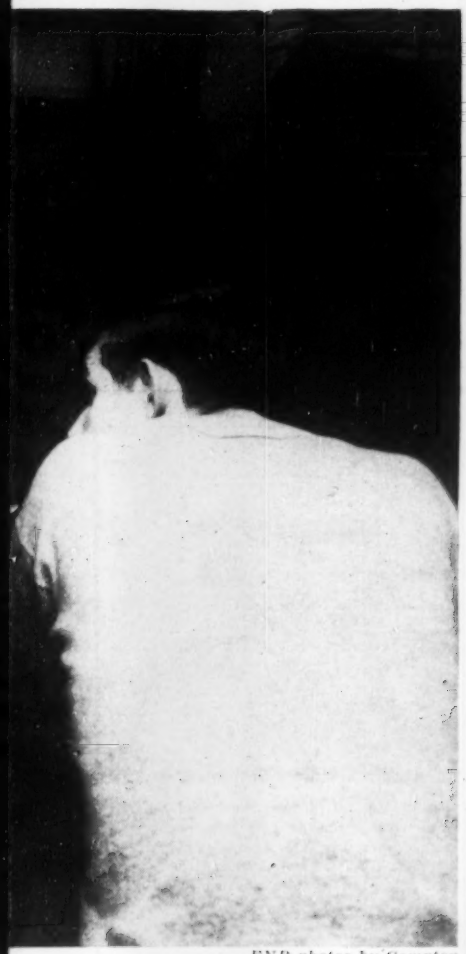
The question before the National Labor Relations Board board examiner in an echoing old courtroom in Emporium, Pa., was whether a union representation election should be held at a site—20 mi deeper into the mountain country among the workers on a $7-million earthfill dam across Sinnamahoning Creek.

But the real issue—which became apparent before the hearing was ten minutes old—was that of craft vs. industrial unionism in construction.

The battle wasn't officially joined—the protagonists themselves hadn't realized the full implications of the matter. But the basic issue emerged clearly enough. The AFL crafts, unprepared to argue anything but their pitch for representation—and there was considerable doubt they could win an election on the project—backed away hastily. Caught in a squeeze between past AFL relationships and a prime contractor who was solidly wedded to UCW, the contractor was happy to agree to an indefinite adjournment.

Here, briefly, is the story behind the hearing:

• **Trouble spot**—When Nello L. Teer Co. and subcontractor Lewis and Bowman, Inc., came out of the South to build First Fork Dam on the Sinnamahoning for Pennsylvania's General State Authority, the job was a natural for trouble, and the pressures which have made for disturbance have been intensified in recent months.



ENR photos by Compton

strength on dam project with organizer Sam NLRB hearing. UCW drive quickens as mine

ndustrial union

The damsite is in the area covered by a 33-county NLRB union shop election in 1948—first of its kind—which cemented the link between the Constructors Assn. of Western Pennsylvania and the AFL carpenters, teamsters, laborers and operating engineers. The same four trades now are challenging the UCW.

Neither Teer nor Lewis & Bowman has joined the constructors' group. Teer, from Durham, N. C., has been using UCW labor on the West Virginia Turnpike, Lewis & Bowman—who have long known the AFL, in their earlier years in connection with the TVA and more recently as subcontractors on the West Virginia Turnpike project—are perfectly willing to work with UCW.

• **Boiling point**—The issue might not have come to a head had employment

(*Continued on page 32*)

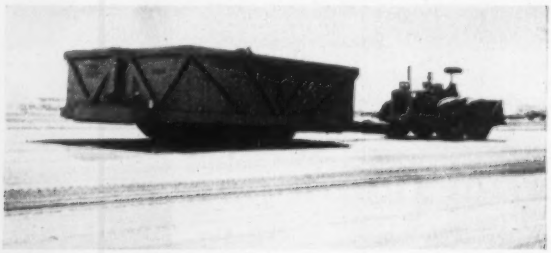
THE HEARING was called off when AFL lawyer (bow tie) and AFL business agents (right) realized hearing was getting on touchy areas. UCW field director (left) and contractor's lawyer (on table) were happy to have inquiry adjourned.

(*Advertisement*)

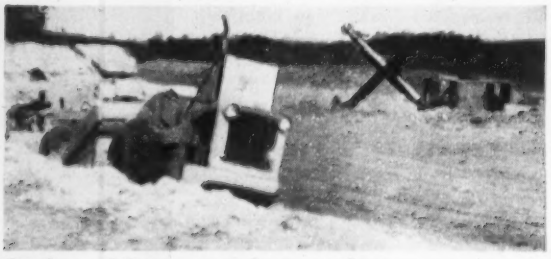
Pictures of the month . . . by LeTourneau-Westinghouse . . .

Haul over roads or open country — Four 35 mph C Tournapulls help speed dirtmoving for J. F. Fitzgerald Company on cloverleaf construction for the Boston-Fall River Expressway. 30° oscillating pivot (big picture) permits fast haul over rough ground without stresses and strains between prime-mover and scraper. Low-pressure tires let rigs drive over pavement without damage to surface (small picture). Fitzgerald gets additional value from his Tournapull prime-movers by interchanging the 16-yd scrapers with 18-yd bottom dumps. All trailing units use same tires, wheels, brake assemblies . . . thus reduce total machine investment.

Haul where trucks can't — When grades at their limestone pit near Ames, Iowa, got too steep for loaded 5-ton trucks, Ray Cook Construction Co drove in two 9-ton LeTourneau-Westinghouse rear-dumps. These units (with their high ratio of hp to wt) haul 9 yds of shale-clay overburden per load . . . complete 1250 ft cycles every 5½ minutes up same grades that stopped trucks.



Plenty of power — 186 hp Tournatractor develops plenty of drawbar pull to tow 200-ton rubber-tired roller. Designed and built by Shovel Supply Co, Dallas, compactor rolls new runway in Texas for heavy jet bombers and big transports. With low-pressure rubber tires on both roller and tractor, operator can cross runways, ramps, and aprons without damage to concrete.



Strips 66 pay yds per hr — Georgia Lime Rock Company works this D Tournapull 12 months a year to strip 3 to 30 ft of low-grade Fuller's earth. Because of its speed, one-man "D" alone uncovers enough lime rock to keep the plant busy. In typical operation, "D" loads 5½ bank yds in 25 seconds. Output averages 66 to 71 bank yds hourly over 1800 ft cycles.

(*Advertisement*)

. . . with performance reports from around the world

In hilly country — R. A. Farish, on 85,000 yd housing job south of San Francisco, takes advantage of downhill loading to heap 13 pay yds in his C Tournapull. On 1100′ cycles, "C's" instant-shift transmission enables operator to quickly select proper gear for steep grades. Four-wheel brakes provide ample safety margin.

Effective three ways — Tournapull rear-dumps haul, doze and compact up to 500 tons of coal a day in this stockpiling yard in Malajor, India. Calcutta Electrical Supply Corporation, Ltd is using 2 of these 9-ton units to eliminate hand-labor problems at their power station. Totally inexperienced operators learned how to use the "push-button" controls within a few hours.

Through mud and rain — J. B. Evans Contracting Company, Quitman, Mississippi, is using D Tournapulls to relocate 1.2 miles of U.S. Hwy 90 near Bay St. Louis, Mississippi. During a steady drizzle of rain, units kept moving in and out of soggy borrow pit, over soft wet fills, without pusher help. Complete 11,000′ cycles took only 7 minutes 50 seconds.

Turns in 27 ft width — Because of Tournapull maneuverability, tight quarters didn't slow this job at all. Hugh Boyle & Sons' 2 C Tournapulls turned around easily, non-stop on this 27 ft street in Washington, Illinois. Removing hard-packed clay and gravel to prepare roadbed for paving, loads averaged 11 pay yds. Cycle of 5000 ft took 10 minutes. Haul was over rough scarified blacktop of old road. For information on any tools on these pages, write LeTourneau-Westinghouse Company, Peoria, Ill.

Tournapull—Trademark Reg. U.S. Pat. Off. Tournatractor—Trademark Plc-611-G

. . . AFL crafts, UCW vie for jobs

not declined in Pennsylvania—as elsewhere—in the last six months.

There is a correlation between UCW organizing activity and mining employment. Now, with the loss of most of the export market for soft coal and with domestic hard coal use in its inexorable downturn, the UCW is scrambling for jobs on construction projects in the coal regions. But construction employment has declined recently too, and AFL building trades from Pittsburgh east through the northern counties of Pennsylvania have entered the competition for jobs.

So, Lewis and Bowman, Inc., working on a diversion tunnel under a verbal extension of UCW's contract with Teer, has become the focal point of a clash which promises to be one of many between AFL building unions and the UCW. What bothers the AFL is the knowledge that perhaps as many as 50% of the work force at First Fork Dam carry AFL cards, but prefer jobs under UCW to idleness.

• **Nobody's eager**—Neither Lewis and Bowman Inc. nor the UCW regional director, Adam Adamczyk was anxious for the NLRB to hold an election. Both have established a sound working relationship, and the tunnel job has been going without disruptive incident. Even while the AFL trades' attorney was pushing his case in the gloom of Emporium's 1890 courthouse, drilling and mucking crews were within hours of holing through the 1,200-ft diversion tunnel.

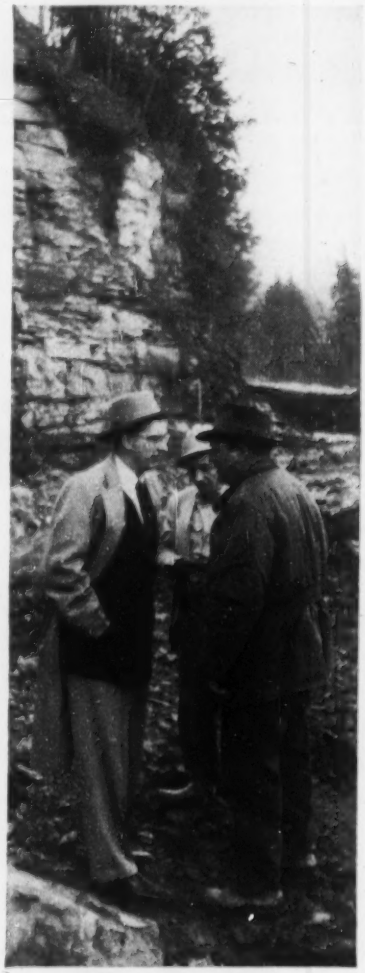
James S. Lewis and his partner, Daniel Bowman, showed every wish to avoid trouble at the damsite, and they believed that continuing their verbal agreement with UCW was the way to do it. Both were enthusiastic when they talked of the freedom from jurisdictional trouble they enjoy with UCW. This feeling was echoed by Floyd Schoolcraft, construction superintendent for Nello L. Teer. Schoolcraft was confident that, should an election be held, UCW would win, despite the high percentage of AFL cardholders on the job.

"It's more or less like having a company union," drawled Schoolcraft, "except that the union really goes to bat for the men. We stick to the contract and everything runs smooth."

The contract, briefly, provides for a probationary period after hiring of workers, also for vacations, and grievance-settling machinery. It states definitely Nello L. Teer's right—and that of Lewis and Bowman, under its verbal extension—to hire workers of their choice. AFL construction trades are still the wage pace-setters for the industry. The job classifications described in the contract follow the general grouping of AFL unions, and the pay scales vary only slightly from AFL-won wages in the area.

The fight for representation at First Fork Dam is a key one, and both UCW and the AFL unions in the area now know it. At stake may be union contracts at several other flood-control dams in Pennsylvania.

• **What is UCW?**—The construction world in general knows the United Construction Workers vaguely as a branch of the mine workers' so-called catch-all District 50, and little thought has been given to the possibilities of UCW growth as a threat to AFL building trades.



UCW REGIONAL director Adam Adamczyk, left, talks with project boss Floyd Schoolcraft.

The fact is that UCW was organized in 1939 within the Congress of Industrial Organizations (then under John L. Lewis) as a horizontal, industry-wide construction union. Twice before this UCW has worried AFL, and twice circumstances have combined to weaken the threat. Whether UCW will become a big force in construction this time is anybody's guess.

Off to a fast start just before World War II, UCW staggered under two blows in quick succession: the withdrawal of Lewis from the CIO, and the wage stabilization agreement of 1941 between the Office of Production Mobilization and the AFL building trades.

When Lewis quit the CIO—and took UCW with him—UCW could not fight both CIO and AFL.

Now, with labor costs an increasing worry to contractors, UCW's straight line organization begins to look appealing to quite a few heavy construction contractors, especially in the coal regions. There's little doubt that UCW leaders aim to push their union elsewhere.

• **How it works**—UCW offers contractors a flexible work force represented by one bargaining group. Rates of pay vary with types of work and skills required for the job, but there is no room for jurisdictional disputes so long as the employer follows contract procedure in shifting workers from, say, making concrete forms to installing reinforcing steel.

The contractor hires men of his choice under a UCW contract, and UCW organizers sign them up after they're on the job. Union dues are handled by checkoff, and in most cases the employer sends dues checks directly to the Washington headquarters of UCW, neatly avoiding the whole mess of work permit selling and all but removing union personnel from opportunities for graft.

There is little doubt that UCW will have to depend on attracting AFL cardholders to man UCW jobs, especially buildings, until the more complex skills are mastered by UCW workers in quantity. Trouble is brewing, for example, in the mid-South, where UCW labor is being used by J. A. Jones to build 10 modern hospitals for the United Mine Workers. AFL building trades unions—at the international level—probably will order their men to avoid the jobs.

INDUSTRY PILOT PLANT treating organic chemical wastes has eight months to come up with an answer.

Key to regional water pollution clean-up

A pilot operation treating chemical industrial wastes is expected to determine design factors for the Somerset-Raritan Valley Sewerage Authority in New Jersey. The pilot installation is run by American Cyanamid Co.'s Organic Chemical Division at its 121-acre dyestuff manufacturing plant on the Raritan River near Bound Brook.

In a 15-month test period, now in its seventh month, Cyanamid must determine how it proposes to dispose of its organic chemical wastes. These wastes make up 70% of an estimated 28 mgd due to be collected and treated in the proposed county-wide project.

Cyanamid is the key to pollution abatement on the upper Raritan River, and has been since the present clean-up efforts began a few years back.

When the Middlesex County Sewerage Authority set forth its original valley-wide scheme (ENR May 29, 1952, p. 58) Cyanamid objected that it would worsen the river's low-flow problem by putting all waste water into a trunk sewer. During periods of extreme drought, the river flow could be diverted entirely. The firm's decision not to enter into the original MCSA project without correction of this and other features it found objectionable was a major factor in the plan's reduction to the $22.5-million intra-county project now under design. The trunk sewer could not be extended into Somerset County economically without collecting Cyanamid's wastes—and collecting also the $207,000 annual service charge it was estimated the industry would pay.

Now the company has joined with Johns-Manville, Sherwin-Williams, and Diehl Mfg. Co. in sponsoring a joint action by three relatively small municipalities of Somerset County to form the Somerset-Raritan Valley Sewerage Authority. A $7.75-million project encompassing trunk sewer, treatment plant and upstream water storage for flow regulation has been planned by consultants Sheppard T. Powell and Whitman, Requardt & Associates (ENR June 11, 1953, p. 27). Cyanamid's share of its cost—almost two-thirds the total—is roughly estimated about $372,000 per year in sewage service charges.

• **To pare costs**—The company's present effort is to establish by findings at its pilot industrial waste works just how its effluent should be treated. It renders quarterly reports to the state on the operation of the pilot plant. At the end of the 15-month period it must decide whether the wastes will be pretreated more economically in a protoype of the pilot installation, or be treated at the authority's proposed central sewage works. In other words, American Cyanamid either will design and build a prototype of the most successful process it can devise in its pilot operation, or it will turn over research results to designers of the authority's project. Either way, what the company learns in the current 15-month operation will determine what the Somerset-Raritan authority builds.

What Cyanamid has to treat is about 20 mgd of organic chemical wastes in a pH range of 2 to 4. Its engineers know from smaller pilot plant tests in 1951 that these wastes can be broken down biologically by a continuous trickling filter process. And they long since licked the low pH problem by piping over a waste calcium carbonate slurry from their neighbor, the Johns-Manville asbestos-cement pipe factory.

• **Exact facts are sought**—The problem is solved qualitatively. It remains now to solve it quantitatively: How much settling? How much BOD and iron can be removed? How much sludge will be developed? How much lime is needed?

In the pilot plant operation, a portion of the industry's wastes, now simply neutralized and settled in lagoons, is given complete treatment: pH is adjusted to about 7.5 with automatically controlled feed of a lime solution. Aeration and neutralization remove carbon dioxide and also oxidize ferrous iron in the wastes.

After aeration the wastes pass through an upflow clarifier where heavy solids settle and the oxidized iron is precipitated with aluminum

floc, and removed by the clarifier's sludge blanket. Then it goes on to the trickling filter, a 20-ft dia bed with a 6-ft depth of stone. This filter has been fed successfully at a rate of 1,000 lb of BOD per acre-ft of stone per day, and rates up to 5,000 will be tried.

Filter effluent goes to a 24-ft dia clarifier with 7-ft swd for final settling. Final effluent at present goes into one of the available lagoons where the bulk of all wastes are settling, neutralizing. From there, they go to the Raritan.

• **No findings released**—The company is not yet ready to present detailed findings from its pilot plant operation. It has another eight months in which to experiment, and a lot of things it wants to try. But in general, it looks as though a plant to treat effectively the full flow of the big chemical industry will take much less area of filters and less volume of lime than originally anticipated.

Just how much less is what will count in dollars when the pilot operation is multiplied out to full flow, whether this flow is handled by Cyanamid or goes through a short sewer to independent facilities at the proposed sewage works nearby.

"Top management" of this firm knows the waste treatment job must be done. If it didn't know before, it certainly has learned pollution abatement is good public relations from being the brunt of a long clean-streams campaign in local newspapers. And the executives know now that the State Department of Health means business.

But being business-minded industrialists, American Cyanamid's management balked at signing into a quarter-million-dollar annual sewage service charge without first satisfying itself fully that the most economical disposal method was known and to be used—just as it would hesitate to install a new production process without sound figures on how soon the investment would pay itself off.

It is certain now that the upper Raritan waters are going to be cleaned, as well as those of the lower Raritan. The question is: How soon? If Cyanamid takes the full 15 months for research, will designers of the Somerset Authority's project be held up awaiting findings? Members of the Middlesex authority downstream won't stand for much delay in designing and building pollution abatement works in the upstream county, after they correct downstream pollution.

American Cyanamid to a large extent has the answers both to how and how soon the Raritan River will be cleaned of its present gross pollution.

Heavy walls keep buildings cool

Lightweight, thin walls with good insulation may be fine for enclosing buildings in certain climates but in others are not so good from a comfort standpoint. Light-colored, massive walls, for example, provide more comfortable interior conditions in warm dry climates.

Persuasive arguments to this effect are presented in a paper, "The Application of Clay Products in Warm Climates," by W. G. Demarest and C. T. Grimm, of the Clay Products Association of the Southwest, Austin, Tex.

In warm climates and during summer months in cooler climates, the coefficient of heat transmission of wall materials, or *U* factor, may not be important as a design consideration, the authors say. The *U* value of a material is applicable only to a state of steady heat flow, whereas in warm climates outside temperatures fluctuate throughout the day.

• **Heat storage important**—To consider U alone is to ignore the heat-storage capacity of construction materials. While a wall of low thermal capacity permits easy, almost immediate, access for heat produced by solar radiation, a wall of high thermal capacity retains heat absorbed during the day and dissipates it during the cooler hours of the night. This ability to store heat is a function of mass, density and specific heat of materials.

Thermal capacity makes a great difference in the amount of heat penetrating to the occupied space of a building, the authors claim, and hence, in total operating costs of air conditioning. Up to a point, the greater the time lag for heat penetration, the lower operating costs will be.

The authors also point out that selection of a light-colored material for an exterior wall may reduce heat gain through the wall as much as 40% compared with dark-colored materials.

• **Structures tested**—Tests conducted by the University of Texas bear out these conclusions. The 24-hour average temperature and daily maximum temperature, as well as temperatures during the afternon and evening, were lower in test masonry houses than in a control house of conventional wood-frame construction. These findings agree substantially with those obtained by the Australian Commonwealth Building Station in Sydney (Duplicated Document No. 27, June, 1948).

• **Design recommendations**—As a result, the authors conclude that, for air-conditioned buildings in warm climates, massive roofs and walls with low *U* values are most desirable. The long wall should face toward the south-southeast for lowest heat gains. Furthermore, windows and walls should be shaded, artificially, with overhangs or louvers, or naturally, with trees.

In the design of non-air-conditioned buildings, prevailing breezes should receive careful consideration in determining orientation and establishing size and location of wall openings. Windows should not be placed in the west wall, and if prevailing breezes permit, windows, in the east wall should be minimized. In warm-temperate climates, *U* should be low for all walls because of relatively constant winter temperatures, and in addition, east and west walls should have high thermal capacity. In warm-arid zones, massive walls are preferable, to store heat during the day and dissipate it at night; *U* value is relatively unimportant.

A combination of massive and lightweight construction can be utilized to advantage for non-air-conditioned houses in hot-arid climates: Daytime living areas should be enclosed with massive walls. Night or sleeping areas should have light construction, which, though hot by day, will cool off rapidly as the outside temperature drops.

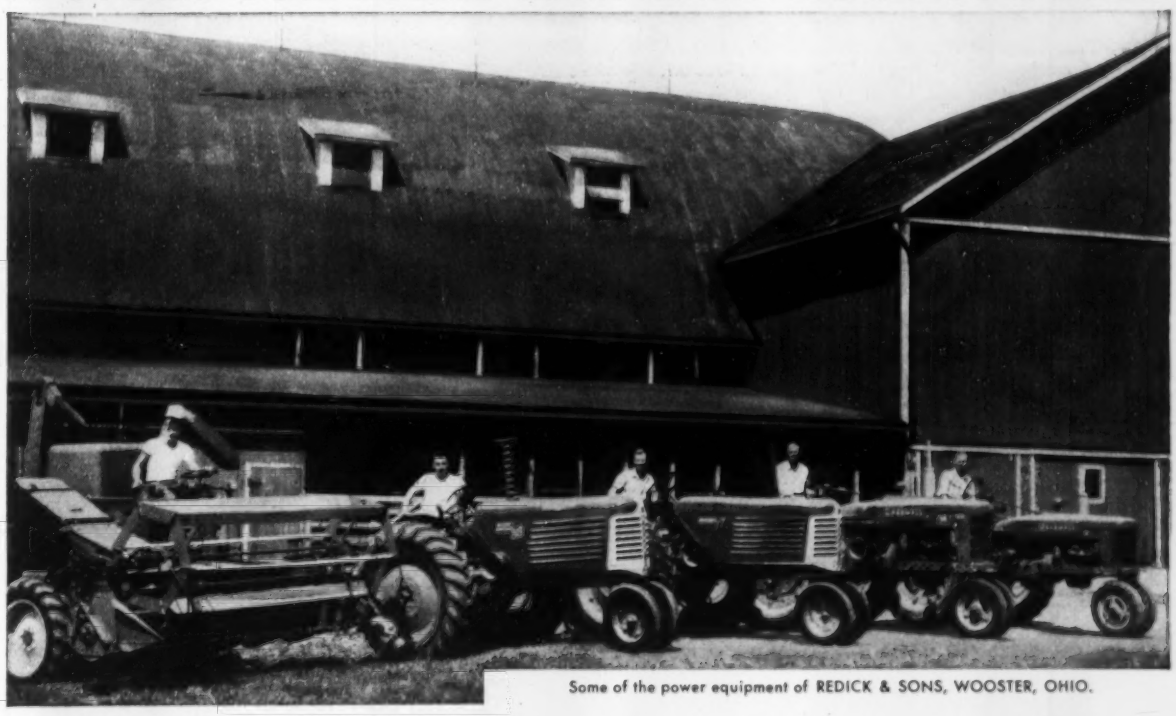
In hot-humid areas, in contrast, neither thermal capacity nor *U* value are as important as ventilation, if the exterior walls are well shaded. Since comfort in such a climate depends almost wholly on evaporation from the skin, free air movement is a prime consideration in building design.

Removable outer wall developed for hot climates

Scientists and engineers of Technion, Israel Institute of Technology in Haifa, have built in Jerusalem double-wall houses that shed their outer wall at night when extra insulation against the heat of the sun is not needed and faster cooling is desired. These structures were based on research conducted by Profs. Heinrich Neumann, M. Peleg and Nathan Robinson, joint heads of Technion's Station for Technical Climatology.

The houses have a thin, permanent wall and a movable outer wall made of insulating panels. During the day, the two act as a single, thick wall, preventing heat from penetrating to the interior. At night, however, the outer, insulating panels are folded back, the permanent enclosure providing the advantages of a thin wall.

A STORY FOR EVERY MAN WITH ROLLING STOCK



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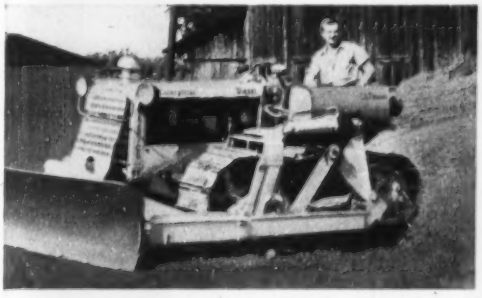

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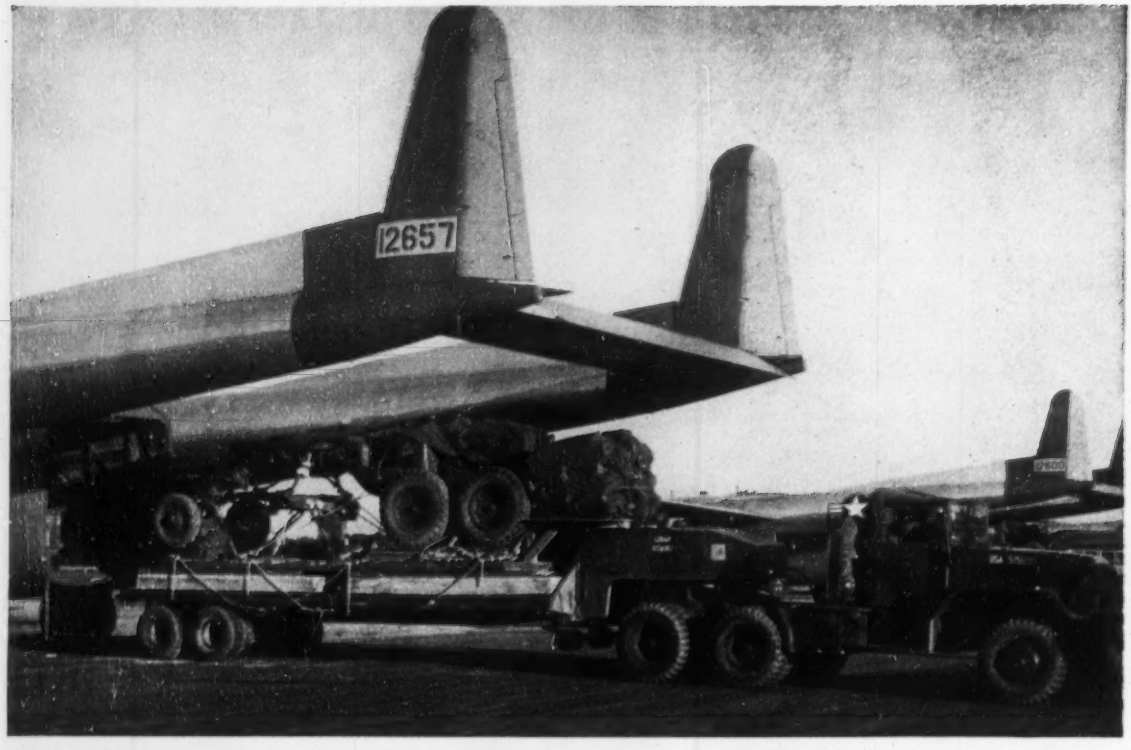


Moving the earthmovers: From the ground up—

Bulk and weight are replaced by horsepower and faster performance in developing a new family of construction equipment that is easily transported overland or by air.

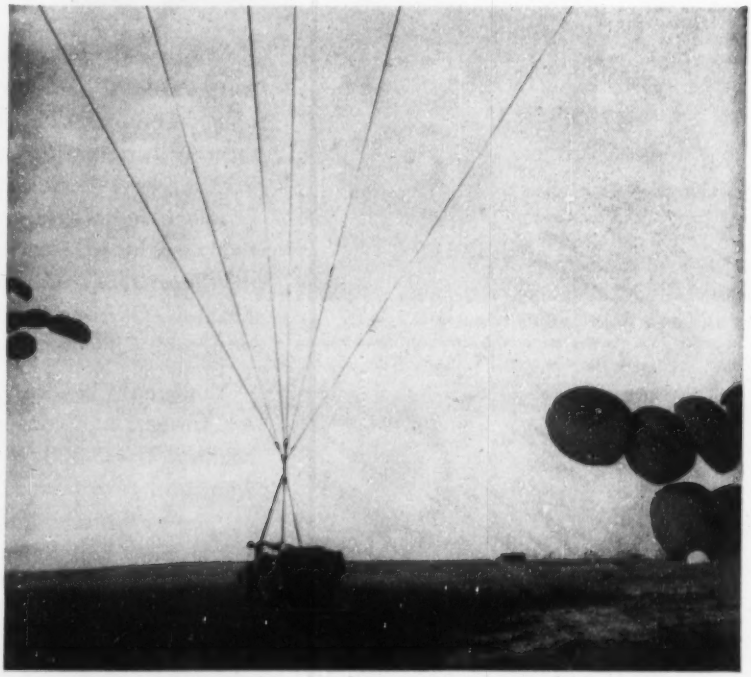
S. C. Jensen
Assistant Editor

Out of the Corps of Engineers' attempts to develop a line of air transportable construction equipment, some lessons have been learned that are worthy of notice by civilian construction men.

Key point is this: Heavy weight and large size are not necessary for high productivity. Addition of horsepower in place of mass and unit capacity can produce efficient machinery transportable by aircraft.

For the contractor it means: Smaller, lighter equipment could be used effectively on one job, trailer-loaded and moved to the next site without special dispensations from highway departments or municipalities. Obviously, transit time is not profitable time, and here is a way to reduce it. Also, the easy transport of equipment permits the contractor to widen his scope of construction activity and permits a greater flexibility in his choice of contracts.

However, the airborne equipment should not be considered as setting a pace—it's too far ahead for that. What it has done is to establish a route



PARACHUTE BORNE, this rubber-tired tractor floats down to fall within the drop zone. An automatic disconnect device releases the parachutes when the equipment contacts the ground to prevent dragging or overturning by surface winds.

that should be investigated more closely.

During World War II, a small amount of construction equipment was flown into combat areas, but aircraft of that period had such low carrying capacities that heavy equipment had to be disassembled. Not only did reassembly consume a great deal of time but scheduling delivery of the components at the construction site was a ticklish problem under the best circumstances.

An alternative was to use light equipment that could be carried by a single plane, but its low productivity precluded wide-scale use.

The situation has been altered considerably since the early '40s with the development of large cargo aircraft such as the C-119 "Flying Boxcar" and the C-124 "Globemaster." These planes—with load capacities of 16,000 and 50,000 lb respectively—can transport material and equipment where there are suitable landing runway facilities available. They have made possible a notable increase in the size and production potential of airborne construction equipment.

• **Rigid specifications**—But there is also a need for high production equipment and material in forward areas, where no landing runways are available—equipment that can be dropped by parachute. Because of the design of the C-124, it is not possible to air drop equipment from this plane. However, the C-119 is suitable for this purpose. The problem, then, was to provide the maximum production capacity equipment that could be transported and dropped from the C-119 "Flying Boxcar" within the 16,000-lb load limit of the aircraft and a cross section of less than 8x8 feet.

These specifications could be applied directly to equipment that was to be landed with the C-119 aircraft. But for units that were to be air dropped, the specifications were even more stringent—air-dropped machinery must be palletized and provided with cushions against impact on landing. In addition, multiple roller conveyors had to be installed in the plane to insure positive extraction.

Outwardly, there is a touch of the impossible to the problem since it has long been accepted as fact that earthmoving equipment, especially such items as tractors, must have tremendous tractive power to assure satisfactory production. It would then seem that if vehicle weight could be halved, productivity would suffer proportionately.

• **The responsibility**—The major burden of the development program was carried by construction equipment manufacturers and by the various elements of the Engineer Research and Development Laboratories at Fort Belvoir, Va. This is another instance where cooperation of industry and the Corps of Engineers has led to successful solutions.

• **How they did it**—On the crawler tractors, heavy framing and gearing were skeletonized where possible and fabricated in reduced sections of high tensile steels. Housing and other parts not requiring great strength were made of light metal alloys. Non-essential guards and accessories were removed completely. The only additions made were ballast boxes that could be filled at the job site to provide additional weight on the machines.

To overcome the disadvantages of loss of traction, accepted power-to-weight ratios were discarded. Of the four makes of light crawler tractors produced, two were equipped with 100-hp gasoline engines and the other two with 100-hp diesels—the equivalent of the power plants used in standard 32,000-lb machines. The weight and bulk of the heavyweights were replaced by speed and agility in the smaller models. Operators of the new equipment soon found they could match the output of the standard machines closely by operating in higher gears at higher speeds.

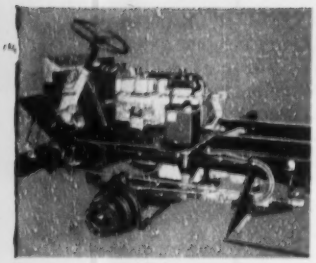
The high operating speeds of these "hot rod" crawlers naturally had their impact on the nature of tractor attachments. Bulldozer blades and scrapers could be made smaller and therefore lighter without seriously affecting productivity.

(*Continued on page 40*)

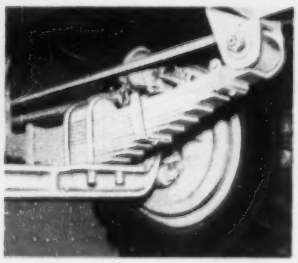
AIR TRANSPORTABLE, this rubber-tired tractor is powered by a 125-hp engine. Net weight is less than 16,000 lb, but provision has been made for the addition of ballast in built-in boxes. The two-wheel, hydraulically operated scraper pictured above will be replaced by a four-wheel scraper of increased capacity, now under development.

All these features are

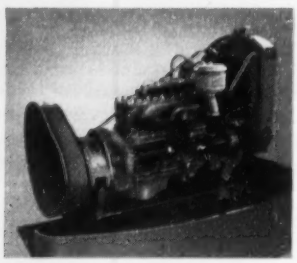
These features are MONEY-MAKING, TIME-SAVING features proved necessary in field performance—they are standard equipment in every BAY CITY CraneMobile.



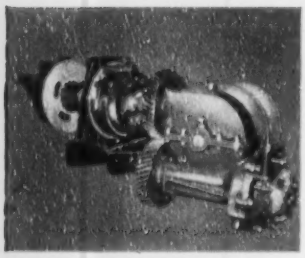
Modern power steering for safe, sure control of CraneMobile on the road and easier maneuvering into position on the job. Reduces road shock and driver fatigue, too.



Air brakes on all six wheels of a BAY CITY CraneMobile are there when you buy it. Some rubber-tired cranes have air brakes as standard equipment on only the rear wheels.

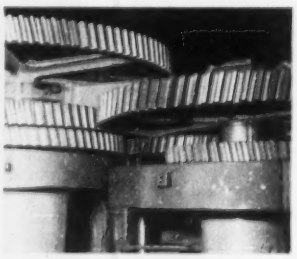


Big engines with relatively slow RPM are standard on all CraneMobiles. They provide all the power you will need for distant travel and "on the job" use.

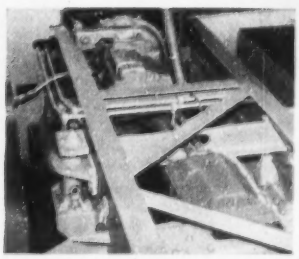


Independent boom hoist of the self-locking worm and worm wheel type with automatic brake insures safety and speed in raising or lowering boom or boom and load.

Collapsible hi-gantry, floating bridle and boom back stops give positive control of long or short booms in every operating position.



Power load-lowering device consisting of idler gearing between drums permits controlled lowering of loads against engine compression without braking.



Main and auxiliary transmission provides 12 forward and 3 reverse speeds for maximum efficiency on the road, better performance on steep grades.

Photos illustrate the 25 ton capacity Model 190 T61 CraneMobile.

BAY CITY

standard on the BAY CITY CRANEMOBILE at no extra cost!

The seven major features illustrated here, plus many other operating advantages are original equipment in the BAY CITY CraneMobile. Some of these features may be available as *extras* on other machines but only in the CraneMobile will you find them all as standard equipment at no additional cost.

So, we suggest you make your own comparison. Compare the outstanding features and advantages of BAY CITY with any other rubber-tired crane on the market. Compare for quality — for durability — for performance. Yes, check the lifting capacity with various booms at different radii — check the ability to raise maximum recommended boom without assistance — check boom hoist action to see if it will raise or lower boom and load under controlled power only — check for ease of operation. Then you will know why we repeatedly say "All Lifts are Easier with a CraneMobile", because BAY CITY gives you most.

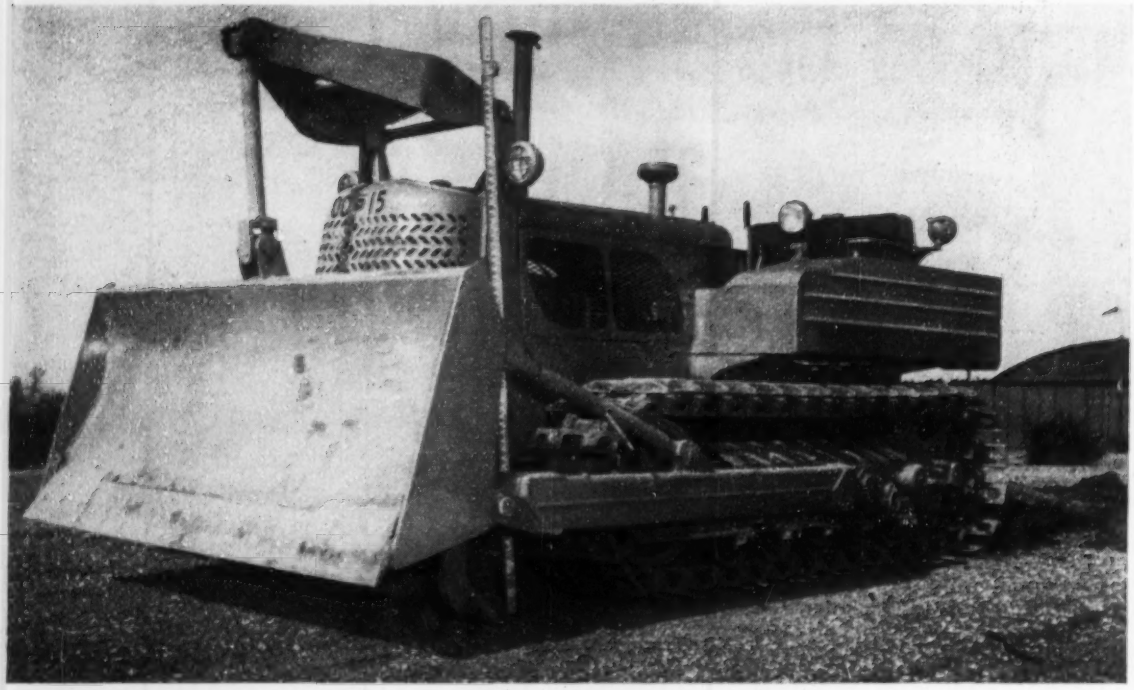
Let our local representative show you the CraneMobile at work. There is one near you.

Write for this booklet

Get this handy pocket-sized booklet of facts and features showing why "all lifts are easier with a CraneMobile". It's loaded with information, it's neatly illustrated and it's yours for the asking . . . Write us.

BAY CITY SHOVELS, INC. • BAY CITY, MICHIGAN

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS



BALLAST BOXES on this 16,000-lb tractor-bulldozer combination may be filled on the job site to provide additional traction. Scarifier teeth mounted behind the dozer blade engage on reverse runs to loosen soil and reduce "washboarding".

Initial success with the crawler tractors was great enough to warrant the application of the high power, low weight principle to a number of equipment items.

A standard size rubber-tired tractor has been provided for air drop, equipped with a bulldozer blade but for use principally for towing scrapers. This unit has been modified to provide ballast boxes that can be filled at the job site to give additional weight for increased traction.

A truck mounted crane with collapsible 20-ft boom was developed to fill out the line, but although within the weight limit, its height was too great to permit anything but air-landed operations and its capacity is not considered great enough to warrant further consideration. Development is currently under way for a larger-capacity unit within the weight and dimensional limitations.

For the present the duties of the cranes are performed by a crawler-mounted front end loader equipped with a crane hook. This unit can also be equipped with a finger lift or dozer blade.

It was found that standard size models of motor graders were acceptable, after slight modification, for air drop operation. Similarly, a 42-in. saw, a 105-cfm air compressor and a 5-ton road roller were suitable with little or no alteration.

A 15-tph rock crusher and a more suitable four-wheel types scraper with a capacity of 6 cu yd or better, as well as the crane mentioned, are currently being developed to round out the air drop family.

• **Plenty of problems**—Because of the factors of light weight and increased horsepower and speed, it was never expected that new equipment would have the same life as standard machines. Experience bore out these expectations.

High speed operations wore track rollers egg shaped in less than 1,000 hr, whiplash action of tracks scored parts of the engine housing, heat-cracked clutch plates required replacement in less than 75 hr, and winch brake linings shredded in even shorter periods. In brief, the equipment required major overhaul every 1,000 hr. or less. But even in this there was victory—the life expectancy demanded by the original specifications was only 500 hr, and the experience gained from pilot models indicates that equipment life may be boosted to 1,500 hr. or more.

The operators had their difficulties too. Lack of experience at first made the light tractors difficult to work with. Accustomed to slow speeds and more time for judgment, the operators produced "washboard" effects with bulldozers and also tired more easily. However, after gaining familiarity with the equipment, the operators' difficulties were eased considerably. In fact, most of them voiced a preference for the fastest of the tractor models.

The early "washboarding" effect could not be blamed entirely on the operators. It was found that the redesigned dozer blades were too light to give good penetration. To combat this shortcoming, hinged, spring-mounted scarifier teeth were fitted to the rear of the blades. By dragging the teeth during the otherwise wasted reverse runs, the earth is loosened sufficiently to offset the adverse effects of the light blade construction.

• **Acid tested**—The new equipment has been flown and dropped on several occasions with successful results. Early in 1953 a successful drop of 40 pieces of equipment was made. Included were eight crawler tractors, eight rubber-tired tractors, eight scrapers, eight dump trucks, five motor graders and three bucket loaders.

Despite extremely unfavorable wind conditions which caused most of the 40 machines to overturn on landing, 50% of the items were at the work site in four hours and 85% were in operation in 12 hours. An air strip 1,500 ft long and 200 ft wide was cleared and rough graded within 24 hr.

This and subsequent tests indicate that airborne construction units are both feasible and valuable adjuncts of the modern military group.

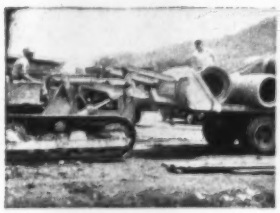
(*More on page 42*)

Stockpiles coal, sand, aggregate. Has traction and flotation to work right up on the pile.

Excavates, fills, levels. Compact — for work in limited areas.

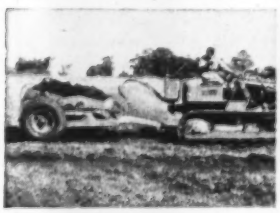
Backfills ditches, packs and levels ground with 16,200 lb. weight.

Cleans up rubble with one-cu. yd. tractor-width bucket.



Lifts material where needed. Saves manpower and need for other equipment.

Does sanitary fill work — digs, fills, covers, levels.



Does drawbar work scraping . . . hauling.

Landscapes, grades or slopes lawn areas around building projects.

ALLIS-CHALMERS HD-5G

Always Busy...

because it does so many jobs so well!

Busy equipment is profitable equipment. And thousands of owners are learning every day the year around that there's no more profitable machine on their jobs than the one-yard Allis-Chalmers HD-5G Tractor Shovel.

Loads sand, dirt, snow — any material to dumping height of 9 ft., ¼ in.

TEN QUICK-CHANGE ATTACHMENTS ADD TO HD-5G VERSATILITY

Bulldozer	Trench Hoe
Narrow Bucket	Lift Fork
Rock Bucket	Tine Fork
Crane Hook	Rock Fork
Light Material Bucket	Ripper

Larger size Allis-Chalmers tractors with shovels and other quick-change attachments offer the same wide utility, the same outstanding performing ability as the popular HD-5G. Choose the one that fits your needs.

1-YD. HD-5G	2-YD. HD-9G	3-YD. HD-15G	4-YD. HD-20G
40.26 drawbar hp.	72 drawbar hp.	109 drawbar hp.	175 net engine hp.
Dumping height*	Dumping height*	Dumping height*	Torque Converter Drive
9 ft., ¼ in.	11 ft., 4 in.	12 ft., 8 in.	Dumping height*
			13 ft., 5 in.

*Height of bucket hinge

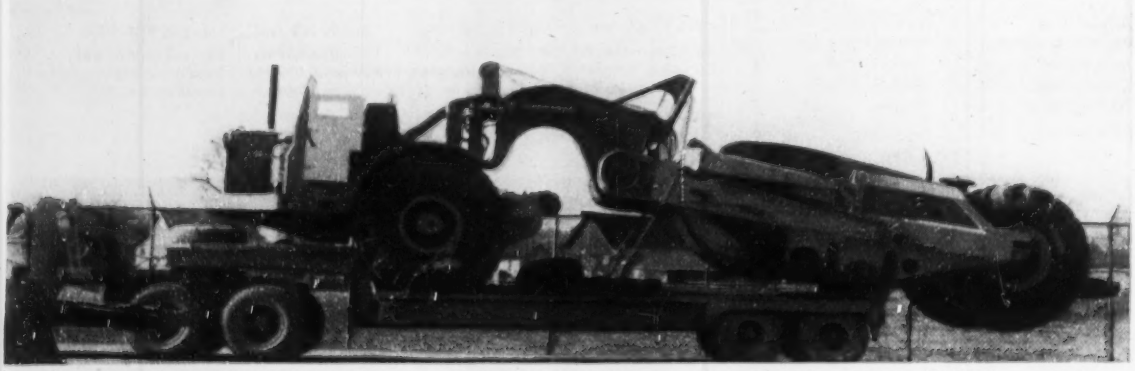
ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

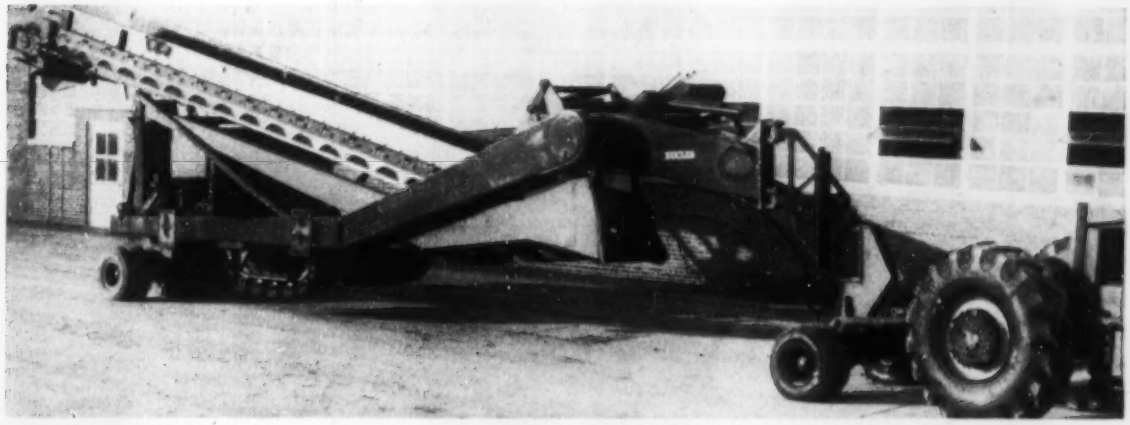
TRUCK-TRACTOR backed into a trench, the scraper is pushed forward with bellyguard resting on the inclined fifth wheel. The earthmover's wheels are removed and the scraper is again moved forward until a special bellyguard kingpin engages the fifth wheel latch mechanism. A rear dolly is added since the loading method makes the scraper axle 1,500 lb over the limit.

Moving the earthmovers: Ingenuity pays off—

AXLE LOADING LEGAL but the entire rig is 66 ft overall and is somewhat difficult to maneuver on sharp turns or in reverse.



SAFER, MORE MANEUVERABLE than above method, but rejected since the truck-tractor axles are 12,000 lb over limit.



OVER WEIGHT LIMITS in most states, this solution is nevertheless logical in view of the equipment's bulky functional design. Improvement might be made with a tandem unit at rear and a fifth wheel connection in front for mounting on a three-axle truck-tractor. The unit probably would be more practicable for highway transport but perhaps not as convenient otherwise.

1954 promises more and increasingly competitive battles between contractors, and, as in military campaigns, logistics will play a major role in deciding the victors. The contractor who can get there "fustest with the mostest" at the lowest possible cost certainly will have an edge on his more rigidly confined competitors.

Manufacturers have recognized this and have designed their products accordingly wherever it was considered feasible. But the problem of transporting larger pieces of construction machinery has called for the development of special methods and equipment for that purpose.

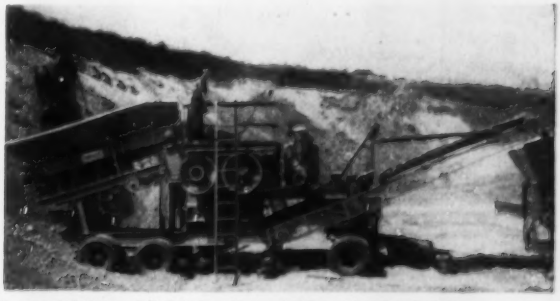
Some of the solutions worked out by manufacturers and contractors were discussed in a paper presented by H. W. Rockwell, chief engineer for the Allis-Chalmers Mfg. Co., before a regional meeting of the Society of Automotive Engineers. This talk is presented here in condensed form in an attempt to show what can and can't be done in attacking one of the industry's major problems.

The roading axle for two-wheeled tractors (at right) was not announced at the time of the original presentation. It has been added, however, since it represents a sound solution of one phase of the problem.

(*Continued on page 44*)

ROADING AXLE can be built to transfer 9,000 lb from the driving axle, reducing that loading to 15,500 lb. The wheels on this axle do not steer but are swung by lowering the scraper bowl to release weight from the nose of the tractor.

FOLDING BOOM and telescoping outriggers give evidence of one manufacturer's attempt to produce a highly roadable convertible unit.



FROM THE GROUND UP this crusher plant has been designed for portability. Width has been held to the legal 8 ft.

YOU'LL BE INTERESTED IN THIS Josam SERVICE IF YOU'RE CONSTRUCTING

- ROADS
- BRIDGES
- AIRPORTS
- TERMINALS
- TUNNELS
- SWIMMING POOLS

Almost every project you plan or build will require products to carry off water, waste materials or hazardous liquids. The selection of the right device for every purpose can be time-consuming and costly unless you know that in the Josam line there is a product designed exactly to fit each need and every location. You don't have to waste a moment if you take advantage of two Josam services — Josam Catalog "K" which makes it easy to select and specify the products you need . . . and your Josam Representative who will gladly consult with you. Send coupon below for free catalog and name of nearest representative.

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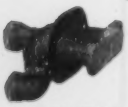

Series No. 0700-B Swimming Pool Recirculating Supply

Series GA Oil Interceptor For Airports and Garages

FLOOR DRAINS
•
ROOF DRAINS
•
BACKWATER VALVES
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INTERCEPTORS for Grease, Oil, Hair, Sediment
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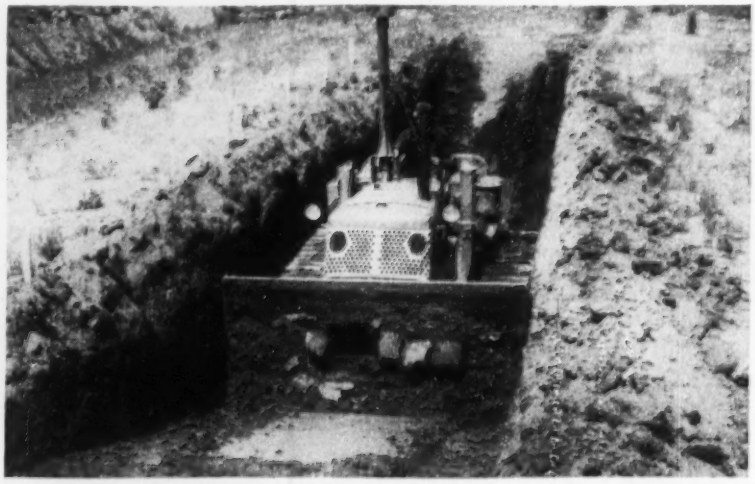
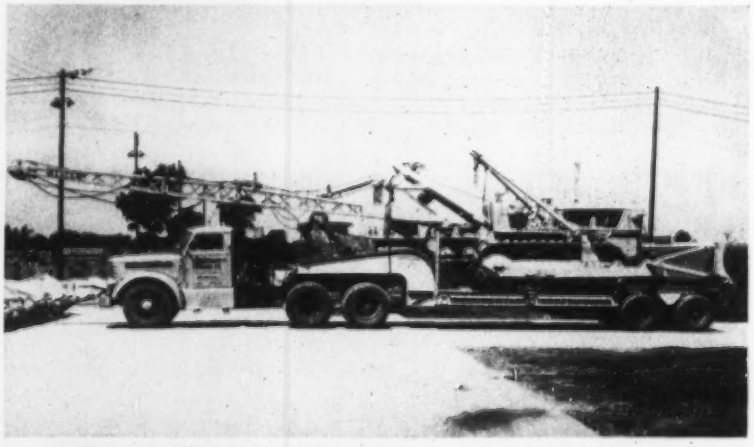
. . . Moving the earthmovers

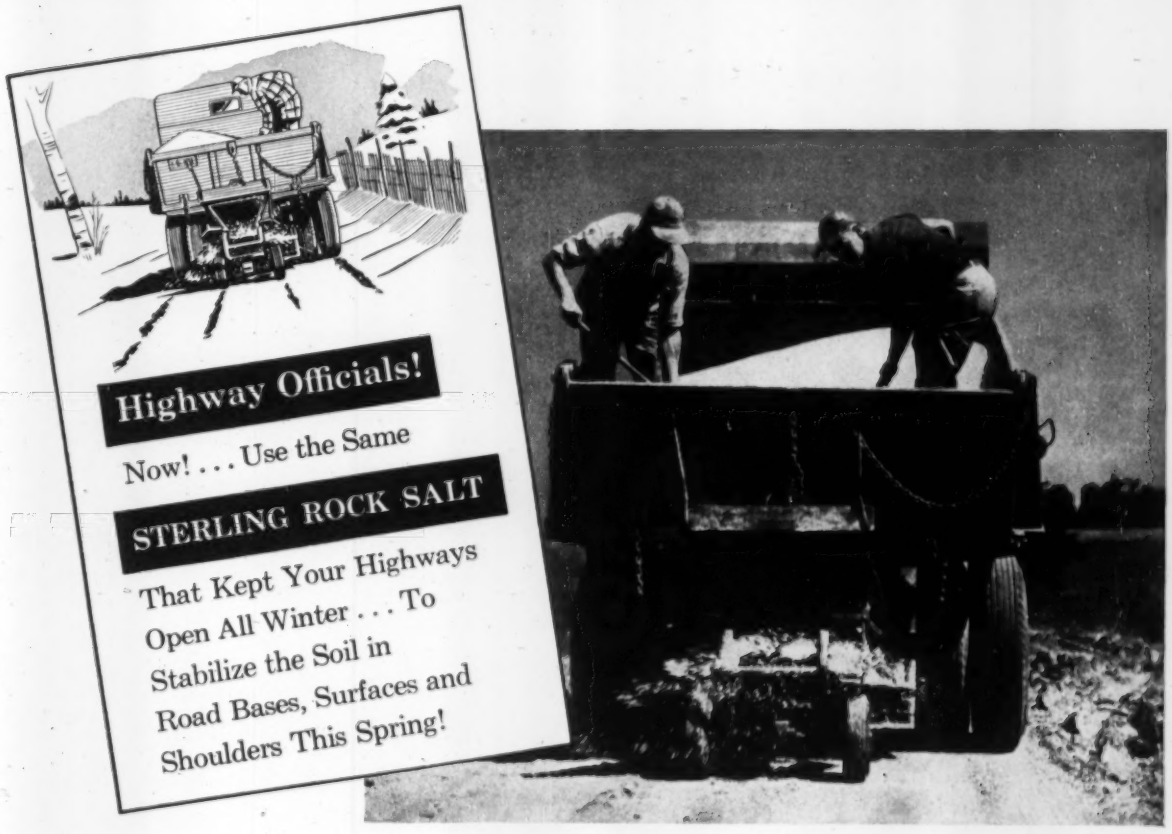
KNOCK-DOWN DOZER can be removed from the tractor, disassembled by withdrawing six or eight pins. The resulting components then can be hauled.



ATTACHING BLADE TO TRACTOR FRAME permits reduction of blade width to 8 ft, thus making it possible to transport the unit on a lowboy without special permits.



DRAGLINE-BULLDOZER LOADING has bucket set on gooseneck to support boom and dozer blade angled to reduce width. Overlength permit would be required however.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That Kept Your Highways Open All Winter . . . To Stabilize the Soil in Road Bases, Surfaces and Shoulders This Spring!

TOUGHER ROADS! SHOULDERS THAT STAY PUT!

Stabilize the Soil and You Minimize Construction and Maintenance Costs!

Highway soil, properly stabilized with STERLING ROCK SALT, resists both excessive moisture and extreme dryness. Granular materials are firmly anchored. Even the strong vacuum action of speeding traffic raises little dust. Precious gravel is not blown away.

Gravel roads . . . inexpensive to build and easy to maintain . . . become first class surfaces, smooth, permanent. Bases and shoulders of concrete or black-top highways do not "break up" or "separate" under weather extremes or the cruel beating of heavy trucks.

Start now, using whatever STERLING ROCK SALT you have left over from the winter. Forecast your needs and order now for spring and summer. Make sure of delivery when you need it!

"Nature's Own Soil Stabilizer"

STERLING ROCK SALT

Free! Send for these Bulletins —filled with practical, on-the-job information for roadmen . . . "BETTER HIGHWAYS THROUGH SALT-SOIL STABILIZATION"

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Tailor-made for tough construction jobs!

With new power and new chassis ruggedness, these great new Advance-Design trucks reduce hauling time and costs in big load, off-the-road operations.

On tough construction jobs—where the grades are steep, the loads are big and the going's tough—new heavy-duty Chevrolet trucks can cut your costs and speed up your schedules all down the line. They're packed with big new advantages you want and need!

NEW HIGH-COMPRESSION POWER

You get extra reserves of power to meet the heavy demands of construction hauling. The mighty, all-new "Jobmaster 261" engine* is the most powerful Chevrolet truck engine ever built! It delivers greatly increased acceleration and hill-climbing ability—*plus increased operating economy that pays off on the job.*

NEW "STAND UP" STAMINA

These rugged new Chevrolet trucks have extra strength in chassis and drive line for longer, lower-cost life. For example, there are higher-capacity clutches, stronger rear axles and more rigid frames in all heavy-duty models.

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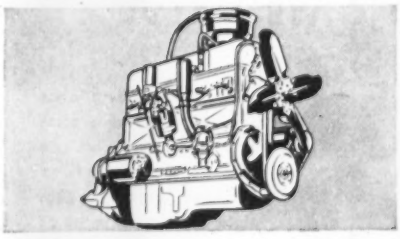
CHEVROLET ADVANCE-DESIGN TRUCKS

NEW CHEVROLET TRUCKS



New "Jobmaster 261" engine

Brings you more power throughout its entire speed range . . . reduces gear-shifting... increases operating economy.

New heavy-duty two-speed rear axles*

Available in two sets of gear ratios to provide maximum flexibility and efficiency on your particular hauling job.

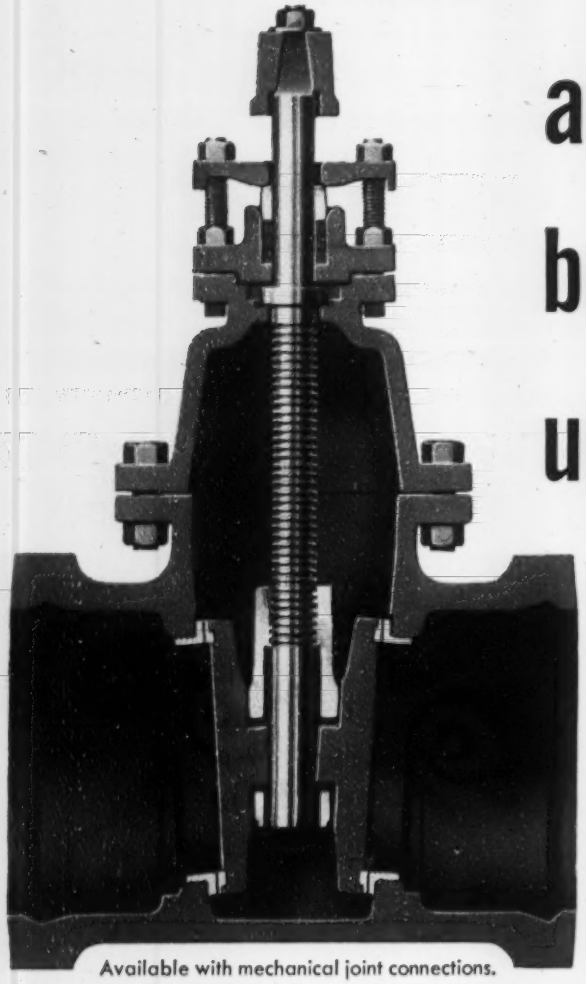
MOST TRUSTWORTHY TRUCKS ON ANY JOB!

Plus all these Advance-Design truck features

THREE GREAT ENGINES—The new "Jobmaster 261" engine* for extra-heavy hauling. The "Thriftmaster 235" or "Loadmaster 235" for light-, medium- and heavy-duty hauling. **HEAVY-DUTY SYNCHRO-MESH TRANSMISSION—DIAPHRAGM SPRING CLUTCH—HYPOID REAR AXLE—TWIN-ACTION REAR WHEEL BRAKES—DUAL-SHOE PARKING BRAKE—NEW RIDE CONTROL SEAT*—NEW, ROOMIER PICKUP, STAKE AND PLATFORM BODIES—NEW COMFORTMASTER CAB—PANORAMIC WINDSHIELD—BALL-GEAR STEERING—NEW ADVANCE-DESIGN STYLING.**

**Optional at extra cost. Ride Control Seat is available on all cab models, "Jobmaster 261" engine and two-speed rear axles on 2-ton models.*

R. D. Wood Gate Valves are reliable because they are uncomplicated

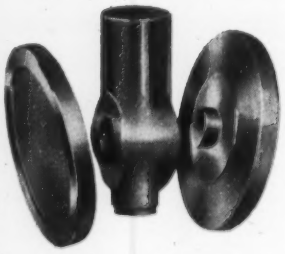


Available with mechanical joint connections.

There's a sort of reverse English to designing R. D. Wood Gate Valves. The point is to make them as simple as possible, to eliminate all the ingeniously complicated parts that look good in the blueprint but cause operating failures deep down in the lines. You'll appreciate their rugged simplicity when you put them to the test. R. D. Wood Gate Valves are built to function for generations of trouble-free flow control.

FEATURES OF THE R. D. WOOD GATE VALVE

Internal mechanism comprises only three parts—the spreader and two discs. Usual small wedges and delicate parts are avoided. Fully opened valve provides unobstructed passage for full pipe capacity.



Rising or descending, discs are free to revolve completely. In closing, discs are fully lowered before spreading action begins. Wear on bronze faces of discs and seats is evenly distributed.

R. D. WOOD COMPANY

Public Ledger Building, Independence Square
Philadelphia 5, Pa.

Manufacturers of Mathews Hydrants and "Sand-Spun" Pipe (centrifugally cast in sand molds)

Cities await word from study of bad water supply situation

Northern New Jersey's continuing water shortage said to be stifling growth—problem still far from long-range solution

A concerted effort is afoot to get industrial and heavily populated northern New Jersey out of the hole on water supply. The municipalities of Newark, Elizabeth and Hillside have raised $25,000 for a study now under way and due to be completed by July to point out where needed additional water may be found.

There is no question about the need. The six principal counties in northern New Jersey used an average of 418 mgd during 1953. Thanks to better-than-average rainfall, this amount of water came from sources with a dependable yield of only 415 mgd. The area is operating in the red on water supply and has been since the 1949-50 crisis, which hit New York City hard, but hit its neighbors across the Hudson even harder.

The big difference is that since the '49-'50 shortage, New York has pushed forward its case for more water from the Delaware River and has put a 100-mgd emergency pumping plant on the Hudson River.

Northern New Jersey, on the other hand, has witnessed construction of a $5-million force main to boost safe yield of its Wanaque Reservoir by 25 mgd,but has planned nothing beyond that.

Meanwhile, the Incodel Plan—proposed by the Interstate Commission on the Delaware River Basin for full utilization of the Delaware River—has faded out of the picture with failure to achieve a four-state compact (ENR Feb. 18, p. 145). Plan would have included an aqueduct from the Delaware River to New York City with outlets to major New Jersey supplies along the way. New Jersey wanted the Incodel Plan, but Pennsylvania's reluctance to support it means it can't now be fulfilled as originally had been planned.

• **Too little, too late**—There is no question that this current planning of a future water source in New Jersey is too late. Already demand has exceeded dependable supply, and there is no way to estimate how much prospective industry the area possibly has lost during recent years because of its known critical water situation. There is some question as to whether the current planning is too limited. Many believe that the project being given prime consideration is just another tack-hammer effort to forestall going to the Delaware River.

The project under study is Round Valley reservoir—a scheme first proposed back in 1920. Round Valley is a natural basin in the hills of Hunterdon County about two-thirds of the way across the state towards the Delaware River. It has no drainage area of its own; water would be brought into the basin from a nearby tributary to the Raritan River. The open end of a U-shaped ridge nearly enclosing the basin would be shut by two dams and dikes permitting an 80-ft depth of stored water. Some 3,500 acres would be flooded.

First two stages of the project to develop about 75 mgd would cost nearly $45 million. This is a horseback estimate. Despite lack of exact information on this proposal, the local press already has made quite an issue of the Round Valley project with sentiment mostly against taking of the necessary land.

• **Legislative efforts**—A bill entered for study in the New Jersey legislature last year would in effect let the present North Jersey District Water Supply Commission continue its administration of the Wanaque supply, but have it also become an agency of the state for development of new supplies for northern New Jersey. This bill made no provision for state guarantee behind bonds that would be necessary to finance any construction endeavor. A compromise bill also entered would authorize a state bond issue for lending to any local water utility needing expansion. Actually, this is as close as the state has come to buying or otherwise staking out the Round Valley site for the purpose of providing for future water storage.

This present study of Round Valley by the engineering staff of the North Jersey District Water Supply Com-

(*Continued on page 50*)

Good lighting—low accident record

Effective lighting is credited by the Seattle, Wash., engineering department with helping to keep the city's $8-million Alaskan Way viaduct virtually accident-free since its opening almost a year ago.

Peak traffic runs to 2,500 cars per hour on the 7,660-ft double-deck structure, which is lighted on the upper level by incandescent luminaires, and on the lower deck by fluorescent lights.

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Above or below grade masonry

ARMOR COAT

ARMOR COAT prevents above or below grade penetration of water in masonry constructions—such as basements, reservoirs, tunnels, etcetera. In addition to water repellent qualities, it is recommended for beautification of homes, commercial and industrial buildings.

During the war ARMOR COAT was used in waterproofing and decorating below grade military workings in England. Many types of paint were tried. ARMOR COAT was the only paint that combined excellent decorative features with high resistance to such severe water pressures below grade.

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Please send me complete information on how to keep porous masonry "Dry as the Desert."

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Company_____
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mission is being made with funds scraped together by the three participating municipalities. Commission sentiment would favor other cities joining in the Round Valley study.

• **Help wanted**—Speaking before the New Jersey Section of the American Water Works Association recently, both Charles H. Capen, chief engineer, and Oscar R. Wilensky, counsel for the NJDWSC stressed their preference for cooperative action at the municipal level, perhaps with the state lending money for property acquisition. It is likely that when the study is completed, and Mr. Capen's report is submitted next summer, it will recommend that state funds be sought to acquire the Round Valley property as soon as possible.

Meanwhile, the population of the water-short six counties of northern New Jersey will increase by an estimated 400,000 in the current decade. The area uses water at a rate of about 130 gallons per capita per day. Multiplying this out makes it obvious that an area already exceeding its dependable yield is due to develop an increased demand that would consume the proposed new source about as soon as it is made available. The Delaware River project still beckons.

Chattanooga catches up—$50-million program working

Chattanooga, Tenn., which, according to local newspapers, "has lagged well behind the other 18 metropolitan areas of the South in population gains during the past decade" is becoming more aggressive.

A $50-million county-city improvement program is being prepared for the area—at least $15 million of which already is under way—and organized groups are preparing to undertake annexation studies in the hope of integrating the urban sections.

• **In progress**—Of the total program, three projects are under construction.
• A $10-million interceptor sewer project is in its second phase.
• A $3.5-million tunnel through the famous Missionary Ridge has been under construction for more than a year.
• The $2.6-million Howard School is three months away from completion.

• **In the works**—Engineering plans have been approved by the city, railroads and state, and have been sent to the Bureau of Public Roads for final approval of a $17.5-million railroad relocation.

A contract has been let for test boring for a new bridge across the Tennessee River, which, with its approaches and accompanying street widening, is a $10-million program.

A proposed approach to the tunnel will cost an estimated $1 million.

In addition, the city is planning expenditure of close to $3 million in school construction, and the spending of more than a million dollars for a street widening.

City and county authorization has been made for a new wing at Erlanger Hospital, which serves that region.

Another sign of forward progress, according to officials, is the concerted effort on the part of the Chattanooga Housing Authority to bring all dwelling units up to minimum standards.

Halt fluoridation

LaCrosse, Wis., is disposing of its fluoridation equipment and supplies under pressure of an irate public.

The city started fluoridating its water supply last year, and for a month heard no complaints. Then a local paper happened to disclose the secret and taxpayers revolted.

Despite support of fluoridation by medical and dental authorities, the sale puts a definite end to the practice in LaCrosse.

Municipal briefs . . .

• **Ambitious improvement program**—Mayor Albert Cobo, of Detroit, Mich., in a message to the city council, declared that $400 million in public improvements will be completed by the city within the next four years, and an additional $200-million worth will be started during that period. The bulk of the work centers around the city's Lodge and Ford expressways and the Civic Center being developed on the Detroit River waterfront.

• **Mandatory disposal**—Now before the city council of Cleveland, Ohio, is a proposal to make garbage disposers, either incinerators or sink type units, a requirement in all new home construction within the city limits.

• **Cleaner streams wanted**—The North Carolina State Stream Sanitation Committee has approved plans for the construction of sewage disposal projects in two cities. A $2-million expansion and installation project at Durham is aimed toward cleaning up the Neuse River, and the $1.75-million expansion of the Charlotte's Erwin Creek plant will increase its capacity and efficiency.

BOOKS

Civil engineers' centennial

CENTENNIAL TRANSACTIONS — Volume CT, Transactions of the American Society of Civil Engineers. Edited by Sydney Wilmot. 1,330 pp. Published by the society, 33 West 39th St., New York 18, N. Y. $4.00.

No adequate review of this monumental work can be written because of its comprehensive coverage of what has happened in the field of civil engineering since the American Society of Civil Engineers was organized. Nevertheless, the very fact that this special volume was issued by the society without fanfare, justlike the many volumes of ASCE Transactions that preceded it, seems to point to the need for comment for fear that many engineers will not know that so much information is available in such convenient form.

In his foreword, Sydney Wilmot states that in selecting from the many papers presented at the Centennial of Engineering in Chicago in 1952 he used this as his guide: "A civil-engineering topic of importance; an over-all picture, up to a hundred years in coverage; and a generalized, non-technical approach—in short, what appropriately has been termed "centennial significance." The selection has been well done. Here is a cross-section of what civil engineers did between the years 1852 and 1952 that will be of great help to civil engineers in the century ahead.

Reports and pamphlets

MOTOR TRUCK FACTS—1953 Edition. Automobile Manufacturers Association, New Center Building, Detroit 2, Mich.

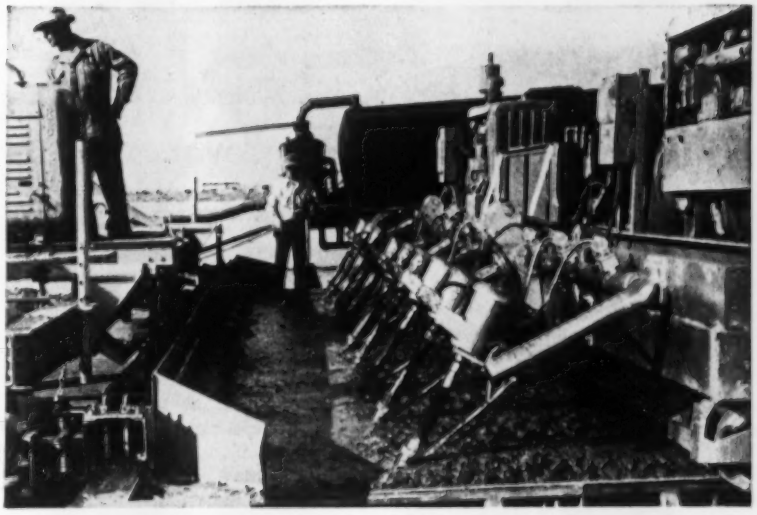
NATIONAL STANDARDS FOR CEMENT MASONRY, ASPHALT, AND COMPOSITION APPRENTICESHIP—Bureau of Apprenticeship, U. S. Department of Labor, Washington 25, D. C.

ACCIDENT RATES IN THE CONSTRUCTION INDUSTRY: 1952—National Safety Council, 425 North Michigan Avenue, Chicago 11, Ill.

COLD WEATHER READY MIXED CONCRETE —National Ready Mixed Concrete Association, 1325 E. Street, N. W., Washington 4, D. C.

GENERAL MOTORS FIRE—Livonia, Mich., August 12, 1953—National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass. 25¢.

ASTM STANDARDS ON BITUMINOUS MATERIALS FOR HIGHWAY CONSTRUCTION, WATERPROOFING, AND ROOFING—American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $3.50.

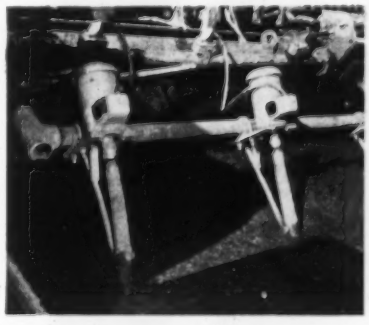


FULL DEPTH VIBRATION is a vital part of laying high strength 19 inch concrete pavement for a 15,000 foot runway at Edwards Air Force Base, California. Thorough vibration by VIBER electric paving vibrators mounted behind the spreader permits fast and accurate finishing of the harsh mix necessary to develop high strength required.

Paving vibrators speed concrete handling in longest runway

Full depth internal vibration consolidates and speeds easy finishing of low slump, high strength concrete in the 15,000 foot runway now under construction at Edwards Air Force Base, in Southern California. A battery of VIBER paving vibrators mounted behind the spreader provides thorough vibration for the full width and depth of the 19 inch thick runway, believed to be the longest ever built.

• PURPOSE OF THE VIBRATION is to produce a uniform, high strength slab which will support modern heavy bombers and withstand the searing blast of jet engines. Thorough vibration also makes it easy to handle a mix so dry it can be finished without delay. This keeps length of the equipment train to a minimum and permits better supervision of working crews.



THREE INCH HEADS spaced across the slab thoroughly vibrate the harsh mix. Operation above 10,000 rpm assures maximum compaction and highest quality pavement. Note simplicity of respacing vibrators by loosening U-bolts and sliding along supporting pipe.

• CONTRACT FOR THE JOB was awarded to a joint venture of R. A. Westbrook, Morrison-Knudsen Company, Inc., and Ford J. Twaits Company. It calls for 411,000 cubic yards of concrete in the runway, associated taxiways, and warmup aprons. Full width, full depth vibration on the job is in accordance with specifications similar to those covering current construction or modernization of Air Force installations in Nebraska, Missouri, Louisiana, Arizona, New Jersey, and even overseas.

• VIBER paving vibrators used on all these jobs are based on an original VIBER design used successfully on airports and highways in the United States and abroad, since 1943. They are another example of the progressive design and development that keep VIBER a leader in the vibration field.

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VIBER

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Who forms our competition overseas?

An ENR survey rounds up foreign firms with far flung construction operations in other lands

The active overseas operations of U. S. construction firms (ENR July 30, 1953) are being matched by the increased activity of foreign firms doing business in countries other than their own, an ENR survey shows.

To a large extent, current international operations of foreign construction firms represent a return to a pre-war pattern. For example, German firms, whose foreign connections were severed by the war, are renewing pre-war contacts in South America and the Middle East.

Here's the picture in countries with the greatest number of foreign firms participating in their development:

• Brazil

Italian

• Societa Anonima Eletrificazione (SAE).—Transmission lines for the Ituting hydroelectric development at Minas Gerais.

• Badoni Brasileira Construcoes Metal Mecanicas S. A. (Badoni Metal meccanica, of Milan.)—Metal constructions.

Norwegian

• Noreno do Brasil S. A., of Sao Paulo. (Norwegian Engineering Export Organization, Oslo, formed by: Aktieselskapet Borregaard, Christiania Spigerverk, Elektrokemisk A/S, Norsk Hydro-Elektrisk, Kvaelstofaktieselskab, Westfal-Larsen & Co. A/S, NOR Construction.) Projects include tunneling at Salto Grande hydroelectric development, Minas-Gerais slipway and warehouses at Santos docks; power plant for Cia Brasileira Aluminia.

Danish

• Christiani & Nielsen—Engenheiros e Construtores S. A. (Home office: Copenhagen.)—Mana pier in Rio de Janeiro and Ford Factory in Sao Paulo.

Swiss

• Montana S. A. Engenharia e Comercio, of Sao Paulo.—Silos, building materials.

French

• Fives-Lille de Brasil, Rio de Janeiro. (Home office: Paris.)

• Cia. Brasileira de Construcao, of Sao Paulo. (Fichet Schwartz-Hautmont.)—Metal constructions.

• Construccoes Metalicas, of Sao Paulo. — Metal structures, tanks, bridges, reservoirs.

• Construtora Franscolor Ltda., of Sao Paulo.—General construction.

• Societe General de Tractional d'Exploitations.—Planning Rio-Niteroi underwater tunnel.

British

• Ypiranga de Engenharia e Industrial S. A., of Sao Paulo.

• British Insulated Callender's Construction Co., Ltd., of Sao Paulo.

• Colombia

French

• Empresas Campenon Bernard de Colombia, Ltda., of Bogota. (Entreprises Campenon Bernard, Paris.)—Constructing a $3.2-million marginal pier at Santa Marta port; the $3.2-million Anchicaya Dam and balancing tower near Cali, for the Central Hidroelectrica de Anchicaya.

• Eleven French companies are at work on a $30-million steel mill for Colombia near Paz del Rio, 160-mi northeast of Bogota. They are: Establissments Delattre & Frouard Rennis (Paris), head of the combine; Societe Alsthom (Paris), generators; Ateliers Schwartz-Hautmont (Paris), cable and wire mill; Stein & Roubaix (Paris), electric furnaces; Forges & Ateliers de Constructions Electrique de Jeumont (Paris), the Jeumont works for Stein & Roubaix and for Alsthom; Societe de Distillation de Combustibles et Construction de Fours a Coke (DISTICOKE, Paris), coke ovens; Establissments Chavanne-Brun (Paris), rolling mill; Heckel Freres (Puteaux), conveyors for coal and ore; Preparations Industrielle des Combustibles (PIC, Fontainebleau), coal washing; Societe pour l'Etudes et la Construction d'Installations Metallurgiques (SECIM, Paris), research; Compagnie de Fives-Lille (Paris), smelters, cranes, buildings.

• Construcciones Tissot Ltda., of Bogota, Bonza and Boyaco. (Societe des Chaudronneries & de Montage, Tissot & Cie., of Podensac.)—Built a $1.2-million factory at Bonza. Also mounting the $96-million power plant for Empresa Siderurgica de Paz de Rio. Other French firms working on the Paz de Rio plant: Alsthom of Bogota, DISTICOKE, and Fives-Lille of Belencito and Boyaca.

• Societe Metropolitaine et Coloniale.

Mexican

• Palomino & Mora, of Belencito and Boyaca.—Mounting the power plant for Empresa Siderurgica de Paz de Rio at Belencito.

German

• Preussag, of Bogota. (Preussische Bergwerks & Hutten Aktiengesellschaft, Zweignierderlassung Erdol & Bohrverwaltung, Leibnizufer, of Hannover.)—Drilling for the aqueduct of Chia, near Bogota. Other waterworks projects at Tumaco, Cartagena and Villavicencio.

• Baucxport, of Bogota. (Home office. Hamburg.)

• Wibau (Wirtschafts & Industriebau A.G.) Theodor Wille, Ltda., of Bogota.

• Hein Lehman & Co. A. G., Dusseldorf and Friedrich Krupp have contract for the construction of 14 steel highway bridges for $4.8-million.

Danish

• Christiani & Nielsen, Ltda., Bogota. (Home office: Copenhagen.)

Canadian

• Williams Bros. Overseas Co., Ltd., of Bogota. (Home office: Toronto.)—Finishing a 91-mi pipeline from Cantimplora to Pucrto Sargar—now working on the pump station and terminal. Also administering Puctro Sargar-Bogota pipeline, which it built.

• Peru

Danish

• Christiani & Nielsen, S. A., Lima. (Home office: Copenhagen.)—Now building the $2-million Chotano-Chancay irrigation project. Bidding one: $1.4-million port works at Salaverry and superstructure of a grain elevator at Callao.

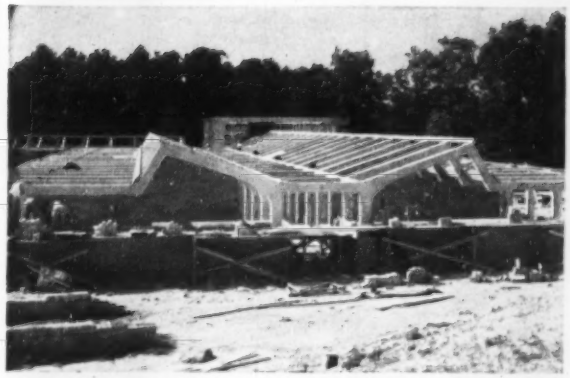
Venezuelan

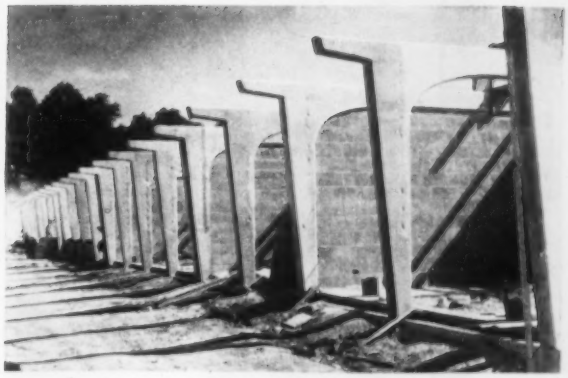
• Constructora Del Conte y Allasia, of Lima. (Home office: Caracas.)—Constructing section of Pan-American highway at Piura, in northern Peru.

Argentinian

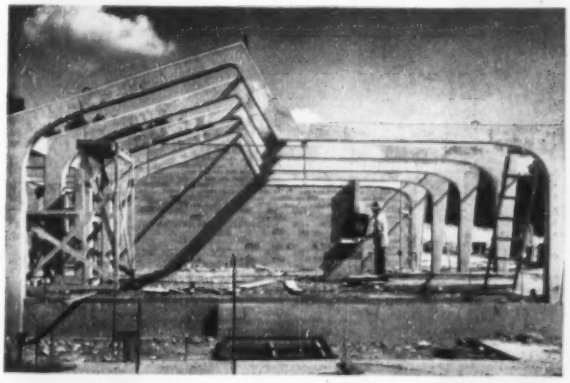
• Panadile Peruana S. A., of Lima. (Panadile Argentine S. A., Buenos Aires, connected with Sociedad Edi-

(Continued on page 57)

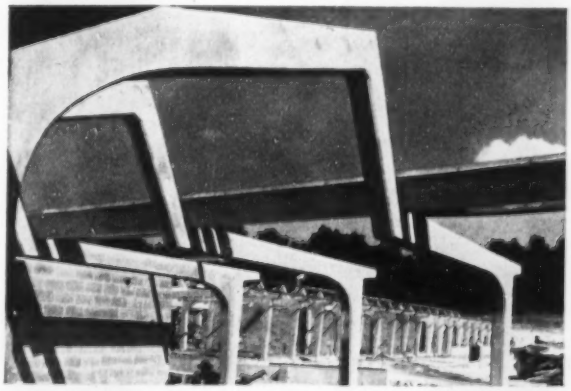




Left: general view showing how the concrete bents frame the corridor and two rows of classrooms. Right: closeup of one classroom wing.



Looking down a row of rooms (above) and out from the rear of one room (below). Bents were designed for inclusion of a skylight to equalize the light in inner areas of rooms farthest from windows.



New School Built at Low Cost with Precast Concrete Bents and Concrete Masonry Walls

You can design and build attractive schools at low cost with reinforced concrete frames and floors and concrete masonry walls. One example is illustrated in these construction photos. It is the Lindley Elementary School in Asheboro, N. C. John J. Croft of Asheboro was the architect and engineer. Dickerson, Inc. of Monroe, N. C. was the contractor.

One hundred fourteen precast concrete bents formed the entire frame of this school—in outside walls, inside hall and the roof with its skylight and overhang. The inner wythe of exterior walls and all partitions are exposed concrete masonry, painted. The entire building cost was only $9.58 per sq. ft.

Besides low construction cost, schools such as this offer low maintenance cost and long life. That adds up to ***low annual cost.*** And they're firesafe. *Concrete can't burn!* For more information write for free literature. It is distributed only in the U.S. and Canada.

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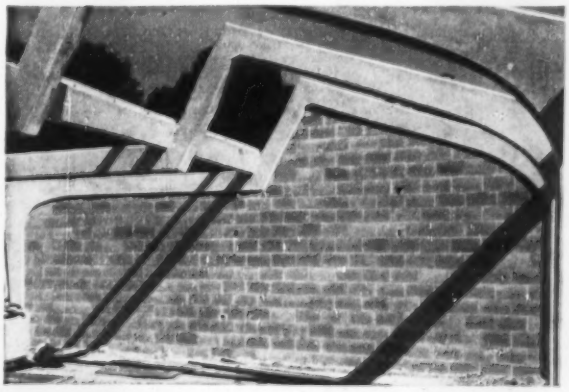
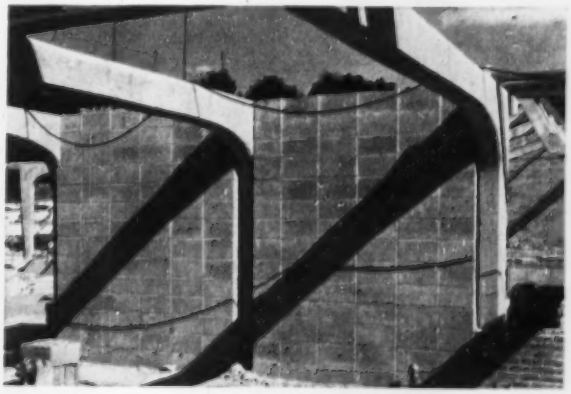
Inside walls are painted concrete masonry, a running bond pattern for partitions and horizontal stacking for inner wythe of outside walls.





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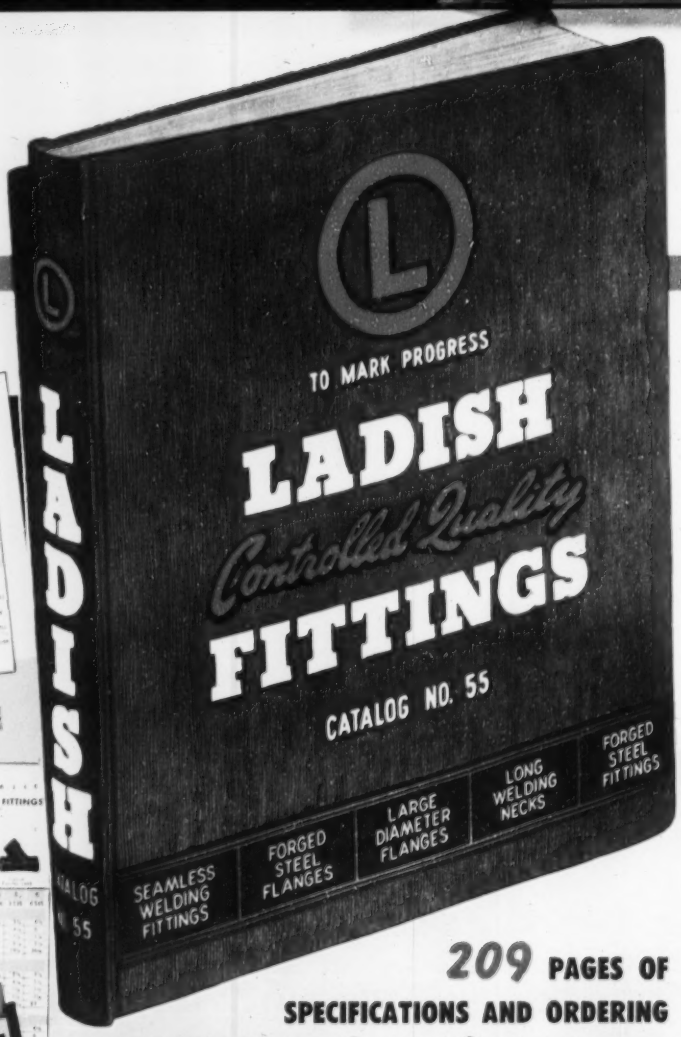

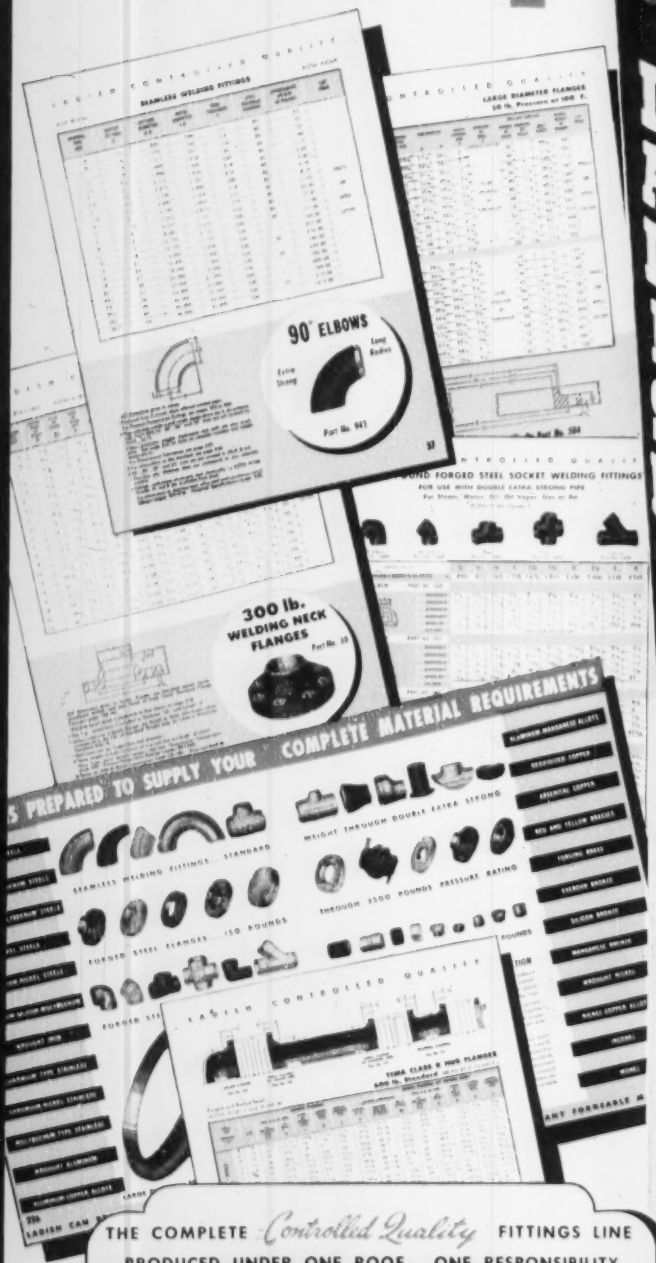

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Photo courtesy of Christian Science Monitor

Mayari R bars being welded to radial truss supporting the main dome of The First Church of Christ Scientist, Boston. Mayari R was selected for this job not only for its resistance to corrosion, but also because it is readily welded.

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son, Foro Bonaparte el, of Milan.)—Bidding on several irrigation projects.

• Venezuela

French

• Societe Nacional de Travaux Publiques.—Road building.

• Campenon Bernard de Venezuela, S. A. (Entreprises Campenon Bernard, Paris)—Awarded $6.7-million contract to build the east dike in the Maracaibo bar dredging project.

• Aisthon.—Awarded contract for the San Lorenzo (Zulia) thermo-electric plant.

Italian

• Sociedades Industriales Marcotulli, C. A. (SIMAR) — Apartment houses and office buildings in Caracas.

• Egypt

French

• Schneider—Bid for construction and equipment of a power station in Cairo for the Egyptian government.

• Turkey

German

• Deutsche Bergwerks & Huttenbau Gesellschaft. (Home office: Salzgitter.)—Sugar refining plants. Also, a grain silo at Trabzon.

• Sueha Silobau. (Home office: Munich.)—Grain silos at Iskenderum.

• Two German firms are working on the Hilton Hotel at Istanbul. They are: Julius Berger (Frankfurt), and Dyckerhoff & Widmann (Munich).

• Heinrich Butzer. (Home office: Dortmund.)—Harbor of Haydar Pasa, Istanbul.

• Grun & Bilfinger. (Home office: Mannheim.)—Grain silo at Haydar Pasa, Istanbul.

• Strobag Baunion. — Airport at Adana.

• J. Maissner. (Home office: Cologne.)—Ammunition filling plant at Kirikkale.

• Three German firms have been awarded contracts for work on the $12.5-million Sariyar Dam and hydroelectric power plant. They are: Philipp Holzmann, Frankfurt, (also will erect two breakwaters and a seawall in connection with Samsun harbor developments); Hoch & Tieff Bau, Essen; Simens Bau-Union, Stuttgart. The Sariyar contract calls for construction of a ⅝-mi long tunnel, 28 ft in dia.

• Krupp. (Home office: Essen.)—A $60-million bridge across the Bosporus.

• Wachmann. (Home office: Essen.)—NATO airfields.

• Kollinger A. G.—Housing units at Ankara.

English

Braithwaite Engineering Co. (Home office: London.)—I. C. I. Building in Istanbul. Construction of textile plants and a cement plant at Izmir.

• Metropolitan Vickers. (Home office: London.)—Extension of steam power plant at Catalagizi.

• Babcock & Wilcox, Ltd. (Home office: London.)—Boilers at Catalagizi.

Dutch

• Nederlandsche Maatshappy. Van Haven W.—Harbor developments at Zonguldak.

Danish

• Kampmann, Saxild (Kampsax).—Consultants to the Ministry of Public Works at Ankara.

French

• Establisement Billard (Home office: Paris.)—Working on Elmali Dam at Istanbul.

• Foster Wheeler Francaise. (Home office: Paris.)—NATO pipelines.

Italian

• Reggiano.—Construction of grain silos.

• Ocrim. (Home office: Cremona.) —Grain silo construction.

Israeli

Solel Boneh, Ltd. (Home office: Haifa.) Working on $5-million worth of airfield projects at Diribakir, Konya and Eskischir.

• Israel

Dutch

• Royal Netherlands Harbour Works, Haifa. (Home office: Amsterdam.)—Recently completed excavation of an 18-mi canal, into which the last section of the Kishon River has been diverted. Also built a 2,000-ft breakwater for the project.

English

• The Cementation Co., Ltd., Haifa. (Home office: London.)—Erection of a silo to store 25,000 tons of superphosphates for Fertilizers & Chemicals, Ltd., of Haifa.

• G. B. Kirshaw & Kaufmann. (Home office: London.)—Working on plans for modernization and extension of Tel Aviv sewerage system to Greater Tel Aviv.

(Continued on page 58)

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Interior PlyForm gives several re-uses, up to 12-15 not unusual...over twice as many re-uses with Exterior PlyForm and overlaid panels. Plan and build forms for long service.
SPECIFY BY DFPA GRADE-TRADEMARKS
These grade-trademarks identify quality panels made expressly for form work: 1. Interior PlyForm (moisture-resistant glue) for multiple re-use. 2. Exterior PlyForm (100% waterproof glue) for maximum re-use. 3. Overlaid (hardboard or hard, resin-fiber surface) Exterior plywood for maximum re-use plus smoothest concrete.
PLYFORM
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® Douglas Fir Plywood Assn., Tacoma, Wn.
Fir Plywood Industry Product

READY...

NEW FOR ANY JOB FOR ANY HEIGHT

ROOSHOR

EXTENSION TYPE

The new ROOSHOR, extension type, 8 ft. to 14 ft. (full 6 ft. adjustment) is always ready for instant use at any height . . . may be used as a flat-head shore, a male-head shore and as an extension shore by merely inserting any length S4S 4 x 4 into the steel head. Full 6 ft. adjustment is at your command with or without the extension. Wooden upper members permit easy fastening of lateral or diagonal bracing.

THE STANDARD ROOSHOR

This adjustable wood-head shore offers instant and accurate adjustment within the range of three sizes: 8 ft. to 14 ft.; 7 ft. to 13 ft.; and, 5 ft. to 9 ft.

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Two identical hinged units that eliminate waste time in fitting and adjusting . . . foolproof . . . automatically square the column forming.

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Gentlemen:

Without obligation, please send additional information on Rooshors and Roos Column Clamps.

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Company_____

Address_____

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INTERNATIONAL

• Iraq

English

• Balfour Beatty, London, has $16-million contract for part of the Wadi Thathar flood control project.

• D., C., & Wm. Press has joint contract (with Lummus Co. of the U. S.) for construction of a bitumen plant at Qiyarah.

• Ransomes and Rapier has contract for Wadi Thathar sluice gates.

• Dorman Long, London, has contract for the Hindiyah road bridge over the Euphrates River.

German

• Zublin and Siemens Bau-Union have construction contract on part of the Wadi Thathar project.

French

• Societe Dumez will build the Dokan Dam, a gravity arch structure costing $24 million. The dam is for a large irrigation project on the Lesser Zab River.

• Hersent Co. has a $3.5-million contract for building the Ramadi Barrage, part of an irrigation project at Habbaniyah.

• Fougerolle will build the 100-mile Kirkuk-Bagdad highway under a contract for $8 million.

• India

English

• Cementation Co., Ltd., Bombay. (Home office: London.)—Strengthening of Tansa Dam.

• John Mowlem & Co., New Delhi. —Tunnels for Machkund hydro scheme in Orissa.

• Reema Construction Co., New Delhi. (Reed & Mallik, of Salisbury.)

• Associated Consulting Engineers, Bombay. (Kennedy & Duncan, London.)—Bombay port extension.

• Indian Mining & Construction Co., Ltd., Calcutta. (Sir Lindsay Parkinson Co., London.)

• Braithwaite & Co., Ltd., Calcutta. (Home office: London.)—Steel fabrication and steel tanks.

• Dorman Long & Co., Ltd., Calcutta. (Home office: Middlesbrough.) —Steel construction.

• Babcock & Wilcox, Ltd., Bombay. —Installation of boilers for Kalvan thermo power station and for Burmah Shell Oil refinery.

• English Electric Bombay—Working on sub-transformers for Tungabadhra, Sangulam hydro station.

Danish

• J. C. Gammon Ltd., of Bombay. (Christiani & Nielsen, Copenhagen.) —Concrete and steel bridges.

German

• Heinrich Butzer, Bombay. (Home office: Dortmund.)—Harbor works and installations for Kandla port.

• Associated Corporation of India, Bombay. (Krupp & Demag)—Surveyors and consultants for India's new $142.5-million steel plant.

• Dodsal Ltd., Bombay. (Allgemeine Elektricitats-Gesellschaft.)—Installation of Trombay thermal power station.

• Protos Engineering Co., Bombay. (Siemens Bau-Union, Stuttgart)—Turbines for Tilaiya, machinery for Hirakud, generators for Maithon Dam. Also, generators and switchgear for Pathri.

French

• Four French companies have been awarded contracts from Pepsu State for boring 160 irrigation wells. They are: Societe Bachy, Hydraulique-Asie, Societe de Hulster and Societe des Sondages de Bonne-Esperance.

• Chantieres de la Loire, of Andhra. —Consultant engineers and naval architects for shipyard.

• Batliboi & Co., Bombay. (Nevrpic, of Grenoble.)—Turbines for Maithon Dam.

Swiss

• Brunnel Bros., New Delhi.—Consultant engineers to India on Bhakra-Nangal power project.

• Larsen & Toubro, Ltd., Bombay. (Oerlikon Engineering Co., of Oerlikon.)—High tension switchgear for Tungabadhra and Maithon dams.

• Three other Swiss firms are employed on the Tungabadhra dam project. Bird & Co., Calcutta (Escher-Wyss of Zurich), and Kavcee Industries, Bombay (Chamilles, of Geneva), are working on turbines. Volkart Bros., Bombay, (Brown Boveri) is working on generators.

Portuguese

• Chowgule & Co., Bombay. (Hitachi Ltd., Tokyo.)—Working on iron ore mining installations in Goa.

Swedish

• Asea Electric Ltd., Bombay.— Transformers for Maithon Dam.

• Syria

Yugoslavian

• Ponorsko Gradevno Produzece (Company of Maritime Enterprise), of Split.—Contractors on a $14-million harbor improvement project at Latakia, on the eastern Mediterranean.

Heart of the plan is a mile-long breakwater to create a large outer harbor.

English

• Sir Alexander Gibb and Partners, of London.—Designers of the Latakia harbor project.

Danish

• Kampmann, Kierulff and Saxild (Kampsax) Ltd., of Copenhagen.—Supervising engineers on the Latakia harbor project.

• Australia

German

• Hochtief Pty., Ltd., Sydney. (Hochtief Construction Co., Ltd. of Essen.) Two jobs: a $900,000-tunnel at Butler's Gorge in Tasmania for the Tasmanian Hydro-Electric Commission, and a dam at George's Creek in New South Wales.

Norwegian

• Selmer Engineering Pty., Ltd., Sydney. (Ingenior F. Selmer A/S of Oslo.)—Has a $6-million contract for building a dam at Guthega and a power station at Munyang for the Snowy Hydro-Electric Authority.

French

• Compagnie Industrielle de Travaux, of Launceston, Tasmania. (Home office: Paris.) Hired by Tasmania's Hydro-Electric Commission for $1.5-million worth of tunnel work on the Trevallyn power project.

• Sainrapt & Brice, Pty., Ltd., Melbourne. (Home office: Paris.)—A $100,000-diversion tunnel for the Geelong Water Trust, and a $500,000-project involving sewers, drains, channels and roads for the Victorian Housing Commission.

• Societe des Etudes et Enterprises, of Melbourne. (Home office: Paris.)—Kiewa No. 1 head-race tunnel and Yallourn "D" power station for the State Electricity Commission of Victoria—and the North Kedron sewer tunnel for the Brisbane city council. (Also the Brown's Island sewerage project in Auckland, New Zealand.)

• Societe Nationale de Travaux, of Melbourne. (Home office: Paris.)—Working with Societe des Etudes et Enterprises forVictorian State Electricity Commission and Brisbane city council.

Dutch

• Australian Dredging & General Works Pty., Ltd., of Williamstown, Victoria. (Maatschappij tot het Uitvoeren van Openbare Werken "Adri-

(Continued on page 60)

ANOTHER PROBLEM SOLVED BY SPENCER, WHITE & PRENTIS

As average pile pier has only 3 piles, every pile must be perfect
454 big piles driven open end to bedrock
Drill rig pierces rock cribs, old piers, sunken ship

Project: Foundation for Colgate-Palmolive Co. industrial service bldg., Jersey City, N. J.

General contractor: George A. Fuller Corp.

Architects & Engineers: Albert Kahn Associated

ENGINEERS OVERCOME OBSTRUCTIONS IN COMPLEX PILE-DRIVING JOB

For a large structure—450 x 220 ft.—having column loads running as high as 900 tons—a firm foundation was of great importance. This entailed great difficulties.

Between ground and bedrock lay a labyrinth of obstructions: boulders, rock cribs, old Cunard Line piers, even a sunken steel ship. Through all these, it was necessary to drive 22-inch diameter steel piles open end to rock. Each pile was designed to carry 230 tons; some were tested to 345 tons.

Old hands with difficult pile-driving problems, Spencer, White & Prentis took this one in stride, using alternate driving and drilling procedures to pass through the obstructions and seat the 454 piles securely on bedrock. Piles were then cleaned by compressed air and filled with high-strength concrete.

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what can steel grating do for you?

You naturally think of steel grating for floors, platforms, walkways, catwalks and stair treads.

But have you ever thought of how steel grating can make your danger spots safe . . . by covering an unprotected open pit or light well, by guarding a fan, by providing some sturdy shelving, or by serving some purpose you'd never thought of before. Look around your plant, both inside and outside, to see where you can use versatile steel grating . . . to make your plant an even better, safer place to work.

If you come across some tough problem on a grating application, we'll be glad to offer our suggestions.

Only Blaw-Knox Electroforged® Steel Grating and Stair Treads —have these five exclusive features:

1. rigid one-piece construction—easy to install
2. all surfaces accessible—easy to paint
3. no sharp corners to clog—self-cleaning
4. maximum open area—for light and ventilation
5. non-slip twisted crossbar—safe footing

A short note will bring you a copy of new Bulletin No. 2365-R —a dimensional sketch will bring you a quotation.

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BLAW-KNOX COMPANY
2001 Farmers Bank Building • Pittsburgh 22, Pa.

BLAW-KNOX EQUIPMENT DIVISION GRATING DEPARTMENT

GRATING APPLICATIONS: floors • platforms • walkways • catwalks • stair treads • fan guards • shelving • and many other uses, both outdoors and indoors, for versatile steel grating

aan Volker" N.V., of Rotterdam; and Van Hattum en Blankevoort N.V. of Beverwijk.)—Working on river entrance docks at Port Melbourne.

• Dutch-Australian Contracting Co. Pty., Ltd., of Richmond, Victoria. (Bataafsche Aanneming, Maatschappij, N.V., and Dura's Aanneming Maatschappij, N.V.)—City engineering workshops for Melbourne city council.

• Hollandse Aanneming, Maatschappij, N.V., of Perth. (Home office: Eidoms.)—Dredging Cockburn Sound near Kwinana in Western Australia.

Italian

• Legnami Passotti-Societa per Azioni, of North Sydney. (S.A. Legnami Passotti, of Brescia.)—Construction of an administrative village for the Snowy Mountains hydro-electric project at Cooma, New South Wales.

• S.A. Elettrificazione. (Home office: Milan.)—Construction of $1.8-million powerline, New South Wales.

English

• John Howard & Co., Ltd., of Kew, Victoria. (Home office: London.) Wharf construction: For Melbourne Harbor Trust, for Geelong Harbor Trust—and at Darwin.

• Leightons Pty., Ltd., of Braybrook, Victoria. (Home office: London.) Development of housing estates for the Victorian Housing Commission.

• Australian Dredging & General Works Pty., Ltd., of Williamstown, Victoria. (Harbour & General Works, Ltd., London, and The Dredging & Construction Co., Ltd., of Norfolk.)—River entrance docks at Port Melbourne.

• Holloway Bros., Ltd., of Melbourne and Highett, Victoria. (Home office: London.)

• Kwinana Construction Group Pty., Ltd., of Perth. (Costain-John Brown & Co., Ltd.; D. and C. and William Press, Ltd.; Kinnear Moodie & Co., Ltd.—all of London.) Construction work on an oil refinery at Kwinana in Western Australia.

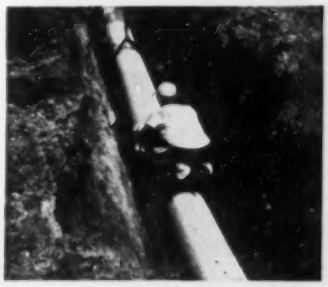
• L. J. McCarthy, Ltd., of Sydney. (McCarthy's Engineering Co. of Lancashire.)—Open-cut coal mining, channeling, irrigation projects.

• George Wimpey & Co., Ltd., of Lithgow, New South Wales. (Home office: Southall.)—Open-cut mining.

• Davis Contractors Pty., Ltd. of Sydney. (Home office: Monk Bretton.)—Open-cut coal mining.

• Dowsett Engineering Pty., Ltd., of Sydney. (Dowsett Engineering Construction Ltd., of Tallington, Stamford.)—Open-cut coal mining.

How to save time on water line installation



On this 12" New England installation of Ring-Tite Coupling, the contractor's bid was based on installing 400 feet per working day for the job conditions prevailing. Actual laying time averaged over 700 feet per day!

Actual experience on this New Jersey installation by a prominent water works utility established entirely new concepts of installation savings effected by the Ring-Tite Coupling. On the job shown, 600 feet of pipe were laid in 5 hours.

On this Florida installation a rate of progress as high as 640 feet an hour was achieved—exceeding by far the speed anticipated considering the job conditions.

Install Transite® Pressure Pipe with the new Ring-Tite® Coupling

Goes together fast, locks tight automatically

CONTRACTORS EVERYWHERE find that Transite Pressure Pipe and the new Ring-Tite Coupling enable them to get in and out of the trench with greater speed than ever before. Typical case histories, as illustrated, prove that important installed savings are made possible with this coupling.

The Ring-Tite Coupling is effecting installation savings everywhere because of its special features. To begin with, pipes are aligned quickly, easily. Coupling design not only provides automatic aligning but also automatic adjustment for expansion. Rubber rings are popped into grooves during assembly, lubricated pipe ends slide in under rings smoothly, easily and surely.

Pipe ends are automatically separated within the coupling. This separation gives the line flexibility to withstand shock and vibration, relieves line stresses, permits conformance to curves.

Like Transite Pressure Pipe, the Ring-Tite Coupling sleeve is made of asbestos and cement . . . it is strong and durable, cannot rust, and is highly resistant to corrosion. Installations can be completed under adverse weather, temperature or terrain conditions. No complicated equipment is required.

For further information write to Johns-Manville, Box 60, New York 16, N. Y.

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Johns-Manville TRANSITE PRESSURE PIPE

AN ASBESTOS-CEMENT PRODUCT

Here's Good News!

LE ROI *dependability*

LE ROI *performance*

in a front-end loader and truck mixer line!

Newly formed Le Roi-Transo division offers you an outstanding line of material-handling equipment that delivers the high standards of performance you have come to expect from Le Roi

Now — through the Le Roi-Transo Division — Le Roi brings you front-end loaders and truck mixers — proved performers that do your jobs faster, easier, at less cost.

Le Roi-Transo Front-End Loaders give you the extra power and dependability of famous Le Roi engines, plus mobility and speed — to let you scoop, carry, maneuver, reverse, and dump with pin-point accuracy and efficiency.

Features include patented "Bucket Rocking Action" for faster, heaped loads . . . torque-converter that supplies a smooth flow of power to the drive wheels . . . clutch-type reversing transmission that cuts reversing time 95% . . . low-carry position that assures loader balance, adds safety and maneuverability.

Le Roi-Transo Truck Mixers are Le Roi-powered, truck-mounted mixer-agitators with outstanding performance records for mixing action, fast loading, speedy discharging of slump concrete, shock-free starting and discharge-reversing with a full load.

The patented Transo direct drive eliminates non-productive dead weight — eliminates ring gears, chains, and sprockets, thus cuts replacement and maintenance costs.

Yes, sir, Le Roi-Transo Front-End Loaders and Truck Mixers are engineered to speed your work and keep costs down. In addition, Le Roi provides a nationwide network of distributors that puts genuine Le Roi-Transo parts, skilled mechanics, and expert service as near as your telephone.

Have your Le Roi-Transo distributor tell you more about the Le Roi-Transo unit that meets your requirements. Write for bulletins.

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Engines
Front-End Loaders
Truck Mixers

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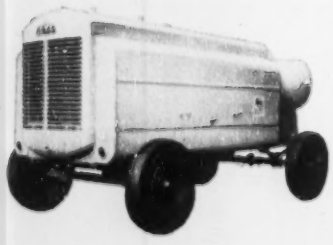
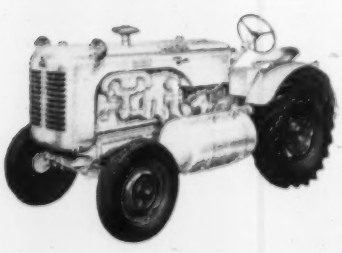
Plants: Milwaukee • Cleveland—Greenwich—Dunkirk, Ohio • Coldwater, Mich.

TO-10

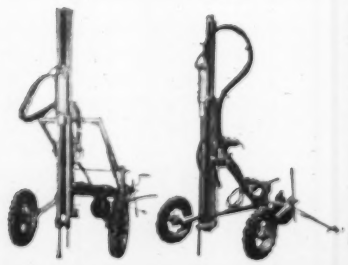
LEROI GIVES YOU MORE FOR YOUR MONEY!



Le Roi Airmaster Air Compressors
8 sizes — 14 models



Le Roi Tractair — Combination 35-hp tractor and 105 cfm compressor



Le Roi-CLEVELAND Wagon-Drills — Heavy-duty model DR30 and lightweight DR34

LE ROI-TRANSO TLF-150
Front-end Loader

4-wheel drive.

Short (84") wheel base.

1½-yd. struck flush bucket capacity.

Maximum dumping height of 14' allows easy clearance of bins, hoppers, etc.

Low 36" to 48" normal carry position reduces lift time from ground.

LE ROI-TRANSO TL-100
Front-end Loader
1-cu. yd. capacity. 2-wheel drive.

LE ROI-TRANSO Truck Mixers
Shorter and lighter than any mixer-agitator of similar capacity! You can use a lighter-weight truck chassis.

Available in 3, 4, 4½, 5, 5½, 6, 6½-yd. capacities, separate engine or truck-engine drive. Open-drum, standard-door, deluxe-door models.

MORE UTILITY! • MORE PRODUCTION! • MORE PROFITS!

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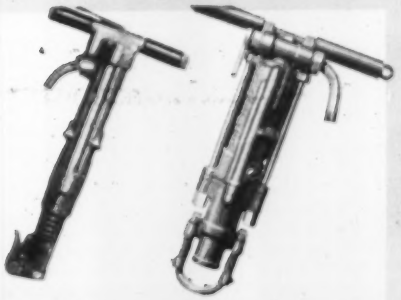
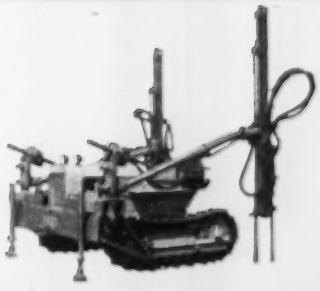


Le Roi-CLEVELAND Paving Breakers and Sinkers — Sizes *from 18 to 80 lbs.*



Le Roi-CLEVELAND T-286 Self-Propelled Dual Drill Rig — *equipped with air-feed sinker drills or drifters*

Photos (including cover) by Clinkscales

JOKE EXCHANGE breaks tension as MacLeod's

John MacLeod:

John Shinn
Pacific Coast Bureau

John MacLeod, who took over as president of Associated General Contractors last week, is a big man in a big tradition.

Standing 6 ft. 1 in. tall and weighing 200 lb—MacLeod is a hard-working, hard-living archetype of the typical American success story. When he first arrived from, of course, Scotland—he was a 17-year-old without friends, family, or fortune. Today he heads Macco Corp., a $20-million-a-year giant. At 60, MacLeod already is something of a legend. He's a man with an enormous capacity for work and an enormous zest for living. He knows almost as much about horse racing as he does about construction—and that's saying a great deal. He can tell people off in honest and forthright terms—and make them love it.

MacLeod "did it the hard way." You hear that from his associates, whether they're oil riggers who worked with him 30 years ago and still work for him, members of his Macco Corp. board of directors, or competing contractors.

• **Went to pick college**—Ask MacLeod what school he went to, and he'll say, with a grin on his big, mobile features, "I graduated from the end of a pickhandle."

As with most men, chance had a good deal to do with the subjects he

executive board shapes Macco Corp. policy.

"YOU GOT TO GIVE old John credit. He doesn't forget his old buddies."

One of best-liked men in construction heads AGC

took—the chance that got him a carpenter's job when he first arrived in Vancouver, B. C., in 1911. Before long he was a carpenter foreman for Bates & Rogers Construction Corp. on the Grand Trunk Pacific in Western British Columbia, next came jobs as construction superintendent, then general superintendent, tie and timber department, Canadian Pacific.

In 1923 MacLeod came to the United States. He made for Los Angeles, and after a stint with William Simpson Construction Co., joined Sam Clark, an oil-rig building contractor. In short order, MacLeod was Clark's general superintendent. In 1927, Clark was fatally injured in an automobile accident, and his widow, his mother, and John MacLeod formed a corporation, Clark Rigbuilding Co., to carry on the business. In 1929, MacLeod bought out his partners and formed the Macco Construction Co.

• **Time to leap**—From the beginning, MacLeod had set his sights on heavy construction. With the formation of Macco, he was ready to take the leap. He hired an engineer with extensive background and went out after business. By 1932 he was in the big time, with the $2,296,000-Cogswell Dam for the Los Angeles Flood Control District.

Macco started with two divisions—rigbuilding and construction—and a subsidiary, Macco Lumber Co. (which became a division in 1945, when the parent company was changed to Macco Corp.). Three other divisions have been added since then—pipeline construction, drilling fluids (a manufacturing division—formed when Macco bought out a small producer of oil well drilling fluids in 1945), and refinery construction.

Macco today ranks among the country's top ten in engineered construction. Alone and with joint venturers, it is currently at work on projects in which it has a $48,450,000-share, about 50% of them in the Southwest, the rest scattered throughout the U. S., in Canada and Latin America.

Organization is a cardinal MacLeod principle. He's a stickler for the chain of command. It's not uncommon, for instance, for him to discuss shop operations with his shop superintendent, but he'll never give the superintendent an order. An order comes only from a man's direct superior, in MacLeod's book. Considering the first-name terms he's on with a large proportion of Macco employees, the principle must sometimes come hard, but he sticks to it religiously.

Board members are men with their own minds, and sessions of Macco's executive board are often hot-and-heavy, with MacLeod's own uninhibited self-expression setting the pace.

• **Keeps gambling out of business**—Everyone who knows MacLeod well has stories to tell about his addiction to the horses. But no one accuses him of being a gambling man in his business practices. In that area, he's strictly the canny Scot. He's willing to take the necessary risks—but they're carefully calculated.

As AGC president, MacLeod is likely to do all he can to convince contractors of the danger of underbidding. In a talk before the Denver AGC chapter a few weeks ago, he observed that the contracting industry had not been so competitive since 1937. And he pointed out the damage to themselves and the industry that contractors can do by letting bid competition overrule solid consideration of direct and indirect costs—not forgetting contingencies and an adequate allowance for equipment depletion.

• **Business booster**—MacLeod wants to see the free enterprise system continue to work, and is willing to devote a large percentage of his time to its good health. He pays serious attention to legislation—on all levels—that affects the construction industry, and he has devoted an increasing amount of time to AGC activities.

He was on the Labor Committee of AGC's Southern California chapter from 1940-49 and president of the chapter in 1941. He became a national director in 1945 and a member of the national executive board in 1950. He was a member of the Na-

(*Continued on page 66*)

what's NEW in Engineering

A new concrete curing process, being tested by the New Jersey Highway Department, may speed the building of bridges and viaducts. It permits the wooden forms supporting wet concrete to be removed in 60 hours instead of the usual 14 days. After the concrete is poured into the forms, 3-foot square mats are laid on top and vacuum hoses are used to draw off excess water. This cures the concrete in a fraction of the time formerly required.

A sinking plant, and what to do about it, was one unusual assignment given Kaiser Engineers. A large area of land on which the tidewater plant was located had sunk six feet in twelve years; the dock loading area had become unusable at high tide. To solve the problem, Kaiser Engineers re-designed the dock area to increase its height and make it serve as a coffer dam to keep the water from affecting the round-the-clock operations of the mill. Tight construction scheduling was a must because of ship traffic and high tides.

Nuclear Engineering is the title of a new book, due this month, by Richard Stephenson, Consulting Chemical Engineer. This is the first book to bring together the many unique engineering problems encountered in the nuclear energy field.

Whatever your immediate research, design or engineering problems, however unusual they may be, an early consultation with Kaiser Engineers is an important step toward their quick, profitable solution. Call or write Kaiser Engineers Division of Henry J. Kaiser Company, Kaiser Building, Oakland 12, California.

tional Labor Committee from 1945-52, vice-chairman, then chairman (in 1951-52) of the heavy railroad division of the national organization. He was chairman of the national public relations committee in 1951.

One of MacLeod's major contributions as president probably will be in the labor field. He is one of the individuals chiefly responsible for the fact that the Southern California chapter's master labor agreement with the six basic trades (adopted in 1941) is considered a model, and that Southern California construction has one of the best labor-management relationships in the country.

Macco Corp. itself has an enviable history of smooth labor-management relations. MacLeod gets an extraordinary personal loyalty from the people who work with him.

You see some of the reason for it if you visit a rigbuilding job with him. Since rigbuilding was the foundation of Macco, it still has a big part in MacLeod's affections, even though it's now a minor part of Macco's total business.

He doesn't get to a rigbuilding job often, but when he does it's a genuinely warming sight to see the riggers swarm around him.

• **Time for play**—He has the valuable ability to forget business when there's no good reason to think about it.

His associates tell about the time, a few years ago, when a flood just before New Year's threatened a Macco dam project in Arizona. When New Year's Eve came, it was a toss-up whether the next news from Arizona would be that the dam was intact, or that it was destroyed, with possible disastrous effects for Macco Corp. Other Macco executives spent an edgy New Year's Eve. But not MacLeod. He worked on the theory that worry wouldn't save the dam, and, at least to all outward appearances, enjoyed the evening's festivities without a care in the world. The dam, incidentally, survived.

MacLeod is a good Scotch Presbyterian, and an active Mason. He still speaks with a good hint of a Scottish burr, and he keeps in touch with the old country, where his mother still lives. He's honorary chairman of the United Scottish Societies of Southern California. A few months ago he was host to Dame Flora MacLeod, head of the Clan MacLeod, when she visited Los Angeles in the course of a check-up on clan members in the United States. MacLeod's home is named after Dunvegan Castle on Scotland's Isle of Skye.

Sound powered TELEPHONES

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Indoor and Outdoor Models

For permanent installation on industrial projects or temporary use on construction jobs. Minimum upkeep. Selective or common ringing and semi-selective or common talking.

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BROOKLYN 32, N. Y.

Servicised ASPHALT JOINT FILLER

- Forms easily compressible cushion
- Highly waterproof
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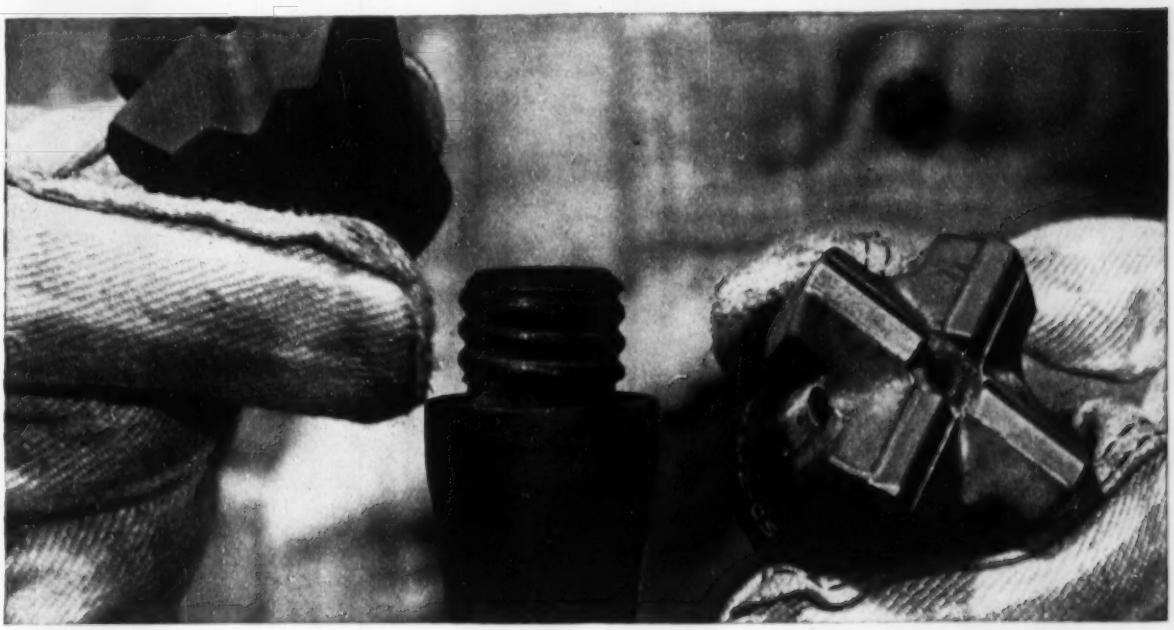

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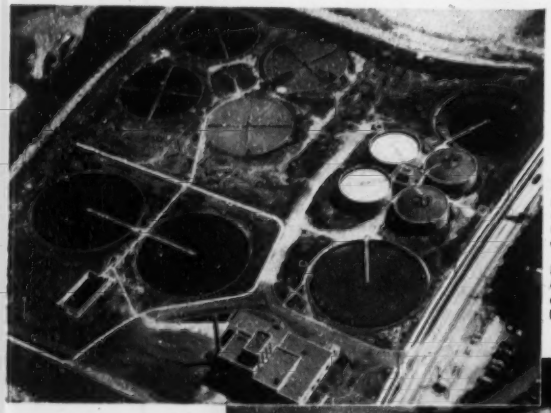
Two major forward steps were taken last spring in Pennsylvania's Clean Streams Program. These new Dorr-equipped treatment plants at Bethlehem and Easton went into operation to play an important part in abating pollution of the Lehigh and Delaware Rivers. Biofiltration and Multdigestion were selected as the most efficient combination at both plants. If you don't already have Bulletin No. 6041, Dorr Equipment and Methods for Modern Sewage Treatment, write for a free copy today. The Dorr Company, Stamford, Conn.



Bethlehem, Pa.
Design capacity is 12.5 MGD using the single-stage Biofiltration flowsheet. Dorr equipment includes two 18' sq. Detritors, four 135' dia. S-7 Clarifiers, four 120' Distributors and two 65' dia. Multdigestion Systems.
Consulting Engineers: Morris Knowles, Inc., Pittsburgh, Pa.

Easton, Pa.
Design capacity is 5.0 MGD and either single or two-stage Biofiltration can be used. Dorr equipment includes one 18' sq. Detritor, four 100' dia. S-7 Clarifiers, two 160' Distributors and a 65' dia. Multdigestion System.
Co-Consultants: Glace & Glace, Harrisburg, Pa. and Whitman, Requardt & Associates, Baltimore, Md.

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OBITUARIES

James P. Martel, 62, division engineer in the design division of the engineering department of the E. I. duPont de Nemours & Co., Inc., died Feb 19 in Wilmington, Del. He had been with duPont most of the time since 1919. Starting then as a filtration engineer, he was assigned to the Chambers Works. In 1921 he became a supervisor there and four years later he was transferred to the design division as an assistant project engineer. Later he became a project engineer. In 1948 he was loaned to the General Electric Co. at the Hanford Engineer Works. He returned to the duPont engineering department and in 1949 became a division engineer, for the design of a cellophane plant for Olin Industries and a nylon plant for the Chemstrand Corp., both built by duPont.

Glenn Hall, 60, Oakland, Calif., city planning engineer, died Feb. 20 in Berkeley. Before going to Oakland in May, 1953, he served for seven years as city planning director of the Sacramento City Planning Commission and as planning consultant to the Sacramento County Planning Commission. Earlier, he was master plan designer for the San Francisco City Planning Commission. Educated at Carnegie Institute of Technology and Harvard University, he was president of the California chapter, American Institute of Planners for the past year.

Leonard L. Farris, 63, area engineer for the water department of Fort Worth, Tex., died Feb. 9.

W. D. Anderes, 58, U. S. area engineer for the Vicksburg District, died Feb. 17, at Greenville, Miss. He had been with the Corps of Engineers since 1915.

Clement Dewart, 69, Palo Alto, Calif., consulting engineer who was connected with major projects including the Golden Gate Bridge, died Jan. 30. As a staff assistant to Joseph B. Strauss, who prepared plans for the Golden Gate Bridge, Dewart planned reconstruction of buildings in the Army-owned Presidio which had to be razed. He also was a bridge engineer with the Michigan State Highway Department. Following his work on the Golden Gate Bridge project (1933-37) he became a consulting engineer. A graduate of the University of Minnesota, he did graduate work at the University of California, Armour Institute of Technology in Chicago, and Stanford University, Palo Alto.

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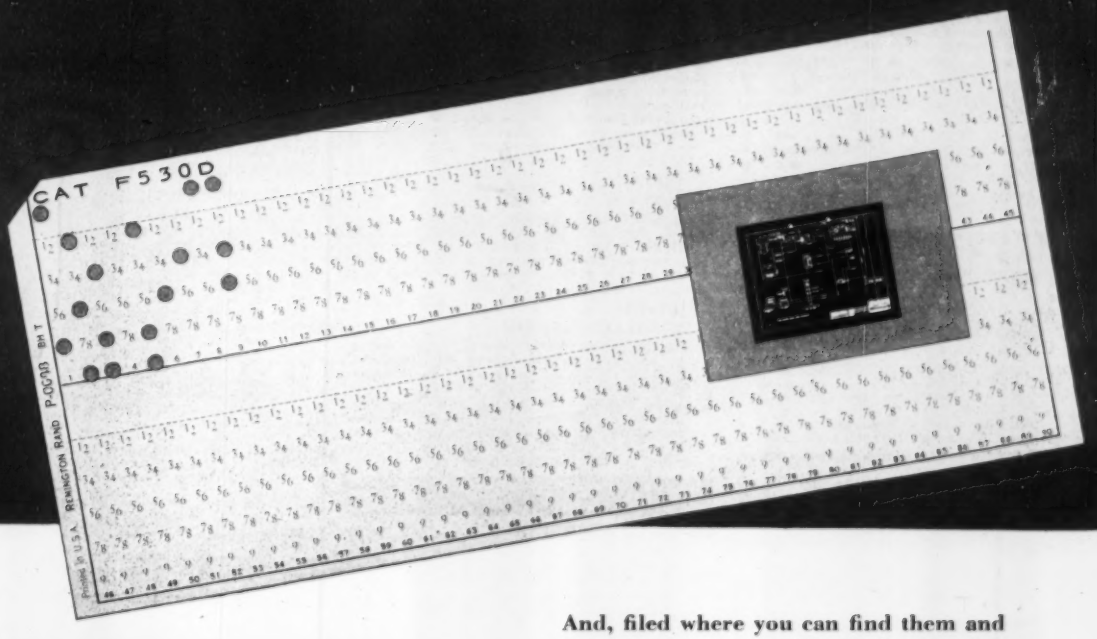

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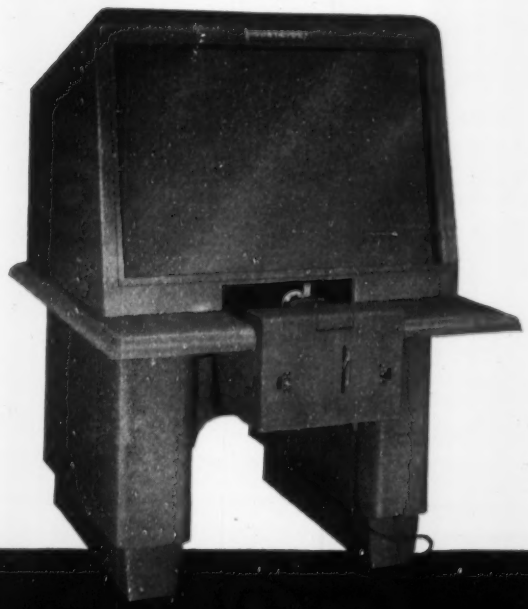

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M E SCIORRA, F S. DEMBEK, Reports.
J. H. WEBBER, M R. ROESSLER, E R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—BUILDINGS

Mass., Nahant—SCHOOL—B.A. 3/16—Town, Bd. Selectmen, Town Hall, elementary school. $316,694. Plans deposit $50, refundable. Clinton F. Goodwin, 25 Washington Square, Haverhill, archt. CD 8/5/52.

Mass., New Bedford—SCHOOL—B.A. 3/17—City, 166 Williams St., Betsey B. Winslow Elementary School addn. $421,000. Plans deposit $50, refundable. Ashton, Huntress & Pratt, 477 Essex St., Lawrence, archts. CD 8/21.

N. H., Durham—DORMITORY—B.A. 3/19—University of New Hampshire, Bd. Trustees, c/o President's Office, Durham, brick women's dormitory, heating, plumbing, electrical. $500,000. Plans deposit $50. Arnold Perreton Assoc., 3 Capitol St., Concord, archt. Dirsa & Lampron, 222 Elm St., Manchester, assoc. archts. CD 8/19.

SOON LETS CONTRACT—BUILDINGS

Mass., Springfield—PLANT—Monsanto Chemical Co., 812 Monsanto Ave., soon lets contract masonry plant addn. to bldg. No. 6 and new Bldg. No. 8. $100,000. Gilbert Small & Co., Inc., 10 State St., Boston, engr. CD 2/11.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Robert A. Verrier Constr. Co.,** 65 Commercial St., Portland, Me., LB **$1,587,576,** est. $2,000,000. water off base, Portsmouth Air Force Base, ENG-19-016-54-71, PORTSMOUTH, N. H. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Whitman & Howard, 89 Broad St., Boston, Mass., engrs. Bids Feb. 24.

▲ MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Marinucci Bros. & Co., Inc., 51 Ceylon St., Roxbury, Mass. LB **$2,655,848,** est. $3,150,000. Sect. 3 hy. and bridge (Southeast Expressway) parallel to Granite Ave., Milton. Bids Feb. 23. CD 1/27.

▲ MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Campanella & Cardi Constr. Co., 780 Jefferson Blvd., Hillsgrove, R. I. LB **$1,471,735,** est. $1,500,000. hy. and bridge constr. Rte. 6, F 328 (3), Dennis and Yarmouth;
Sacco Constr. Co., S. Bellingham, Mass. LB **$72,013,** est. $72,000. hy. Rte. 93, Grafton. Bids Feb. 23. CD 2/10.
F. B. O'Neil & Co., 32 Byrd Rd., Wethersfield, Conn. LB, $167,250, Contract 9, lateral sewers, E. Broadway and Trumbull Beach Area, MILFORD, CONN. Town, Town Hall, Milford, Conn. Bids Feb. 23. CD 2/10.

BUILDINGS

LOW BIDS AND CONTRACTS

Edward Packtor Co., 462 Silas Deane Hy., Wethersfield, Conn. CA, $375,000, MFG. PLANT and OFFICE, HAMDEN, CONN. Eastern Industries, c/o Irving Rutherford, archt., 49 Garden St., Hartford, Conn. Bids Feb. 11. CD 2/8.

MIDDLE ATLANTIC

BIDS ASKED—BUILDINGS

▲ Pa., Pittsburgh—SCHOOL—B.A. 3/16—Bd. Educ., Forbes St. and Bellefield Ave., 1 and 2 story, brick, aluminum tile grade school, St. Clair Village, between Mountain Ave. and Rectanwald St. $1,000,000. Plans deposit $25. CD 10/7.

N. J., Freehold—COURT HOUSE—B.A. 3/29—Bd. Freeholders Monmouth Co., Court House, new county court house. Plans deposit $50. Extended date. James W. Mancuso, 9 Memorial Parkway, Long Branch, archt. CD 2/17.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

NEW YORK—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,
Baron Constr. Co. Inc., & Talarico Contg. Corp., Herkimer, N. Y., LB $404,874, est. $495,000, bridge over Fox Creek and relocating 0.88 mi. sect. Rte. 30 in vicinity of Old Stone Fort, northern edge of Village of Schoharie, Schoharie Co.;
A. Barboni Sons, Inc., Syracuse, N. Y., LB **$85,590,** est. $97,000, new bridge, 0.22 mi. approaches where Rte. 37 crosses Pike Creek, approx. 2 mi. west of Fort Covington, Franklin Co. Bids Feb. 25. CD 2/3, under Streets and Roads.

▲ NEW YORK—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,
Zara Contg. Co., Inc., Engel St., Hicksville, N. Y., LB $1,785,785, est. $2,060,000, wid'n., resurf. 2.16 mi. Conduit Blvd., Nassau Co.;
Green Island Constr. Co., 594 Broadway, Watervliet, N. Y., LB **$183,039,** est. $235,000, relocation and constr. 0.71 mi. sect. Rte. 32 to straighten route just north of Gansevoort, Saratoga Co.;
Arute Bros., Inc., 560 S. Main St., New Britain, Conn. LB **$321,806,** est. $373,000 22 ft. b. conc. 3.08 mi. Sharon Turnpike (County Rd. 106) from Millbrook southwestward to Rte. 44, Dutchess Co. Bids Feb. 25. CD 2/3.

▲ NEW YORK—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,
Berlanti Constr. Co., Inc., 15 Oakland Ave., Harrison, N. Y., CA **$1,647,223.** est. $1,667,000, elimination of grade crossing of New York Central R.R. and Mt. Kisco Village; Main St., S.H. 865, South St. and Hubbels Crossing, 1.7 mi. PSC 4678-5777, Westchester Co.;
Raylin Constr. Corp. & The Lynn Corp., 11 W. 42 St., New York 36, N. Y., CA **$3,119,288,** est. $3,309,000 New York State Thruway-Hudson Sect. Subd. 10 (Tuckahoe Rd.-Tarrytown, Pt. 2), access ramps; Mountain Rd., 0.73 mi. acc., 0.42 mi. Thy., H.T. 53-13, S.T. 53-35, Westchester Co Bids Dec 3. CD 1/27, under LB.

▲ DELAWARE—State Hy, Dpt., Dover,
Nello L. Teer Co., Box 1131, Durham, N. C. LB **$301,958,** 6.255 mi. Harbeson to Five Points F-16 (3), Contract 1265, Sussex Co.; LB **$999,557,** 5.618 mi. Five Points to Rehboth F-182 (3), Contract 1152, Sussex Co. Bids Feb. 17. CD 1/28.

BUILDINGS

LOW BIDS AND CONTRACTS

Connellsville Housing Auth., Connellsville, Pa. rejected bids June 2, 1953, Connellsville HOUSING, Proj. Penna 25-1, CONNELLSVILLE, PA. LB **$743,000.** Will re-advertise. CD 6/10, under LB.

▲ **Housing Corporation of America,** C. A. Fritz Bldg., Wash., D. C. CA Est. **$2,500,000.** 250 detached frame HOMES between Connecticut Ave. and Viers Mill Rd., WHEATON, MD. John d'Etagnier, 1004 Ripley St., Silver Spring, Md., archt.

SOUTH

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Mountain States Constr. Co.,** 5111½ MacCorkle Ave. S., Charleston, W. Va., CA, **$1,020,000** Sects. 3 and 4, sewers, CHARLESTON, W. VA. City, City Hall, Charleston, W. Va. Bids Dec. 18. CD 12/24, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

† **Pittman Constr. Co.,** 2925 Franklin Ave., New Orleans, La. LB **$661,964** (350 days).
Farnsworth & Chambers Co., P.O. Box 332, New Orleans, La. LB $677,000 (240 days) addns. to BUILDINGS and utilities Veterans Admin. Hospital, GULFPORT, MISS. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Feb. 23. CD 1/5.
W. F. Holt & Sons, 1119 Laurel St., Nashville, Tenn., CA **$436,000,** brick, stone, steel, wood TEMPLE NASHVILLE, TENN. Vine Street Temple, 136 7th Ave. N., Nashville, Tenn. Taylor & Crabtree, 1908 Church St., Nashville, Tenn., assoc. archts. Braverman & Halperin, Euclid 71st Bldg., Cleveland, O., archts. Awarded Feb. 22. CD 2/12/53.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
B.A. Bids Asked
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

MIDDLE WEST

BIDS ASKED—BUILDINGS

▲ **Wis., Fond du Lac**—SAFETY—B.A. 3/30—City of Fond du Lac and Fond du Lac Co., 1 and 2 story, H-shaped, 168x204 ft., overall safety bldg. $1,000,000. F. J. Stepnoski & Son, 25 E. Merrill Ave., archts. CD 9/6/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ OHIO—State Hy. Dpt., Columbus,
Clinton Asphalt Paving Co., 135 N. South St., Wilmington, O., LB **$131,931,** est. $132,800, Type T-35, 1.107 mi. USR 62-29.23, Brown Co.;
Finke Eng. Co., 114 S. Perry St., Dayton, O., LB **$80,897,** est. $75,150, Type T-35 on B-70, 0.497 mmi. SR 4-(22.20-22.56), Montgomery Co.;
Kane, O'Horo & Haenny, Inc., 65 W. Indianola Ave., Youngstown, O., LB **$776,630,** est. $843,800, Type T-35, 3.863 mi. SR 7-(5.05-8.72), Mahoning Co.; LB **$937,618.** est. $1,044,650, Type T-35, 3.355 mi. SR 7-(8.86-11.26), U-422 (5), U-524 (7), City of Youngstown, Mahoning Co.;
C. F. Replogle, Box 308, Circleville, O., LB **$214,414,** est. $240,000. Type T-35 on B-119 and structure, 0.587 mi. SR 8-20.03, Monroe Co.;
Foley Constr. Co., 5050 Orchard St., Cincinnati, O., LB **$1,679,729,** est. $1,830,600, Type T-71, 3.695 mi. Hy. USR 50-10.80, U-1100 (2), City of Cincinnati, Hamilton Co.;
John R. Jurgensen, P.O. Box 254, Newtown, O., LB **$109,398,** est. $128,950, Type T-35, 4.163 mi. SR 124-(5.54-9.26), S-569 (15), City of Jackson, Jackson Co.;
George B. & Cletus H. Patterson, 1200 Main St., Wellsville, O., LB **$129,421,** est. $125,900, Type T-35 on B-70, 0.522 mi. USR 22-(16.75-16.91), U-431 (8), City of Steubenville, Jefferson Co.;
Ohio Road Imprvt. Co., 30 E. Broad St., Columbus, O., LB **$308,969,** est. 313,600, Type T-35 on B-117 and structure 4.449 mi. SR 301-(2.60) (3.47), S-199 (3), Medina Co.;
Ira F. Hartman, Box 51, Williston, O., LB **$141,665,** est. $141,350, Type T-35 on B-119 and structures 0.386 mi. SR 19-8.04, S-131 (2), Ottawa Co.;
V. N. Holderman & Sons, Inc., 891 Oakland Park Ave., Columbus, O., LB **$1,934,690,** est. $1,939,900, Type T-71 and structure 5.355 mi. USR 23-4.29. OAA-F-11 (12), Ross Co.;
Kulka Industrial Corp., 826 N. Webb Ave., Alliance, O., LB **$98,893,** est. $113,000, Type T-32 on B-119 and structures 0.321 mi. SR 709-(2.04), (6.53) (9.17), S-1151 (1), Van Wert Co.;
cancelled bids to have been opened Feb. 23 Type T-35 on B-119 and structures, 2.447 mi. SR 73-10.16, S-492 (3), Scioto Co. Bids Feb. 23. CD 2/1.

▲ ILLINOIS—State Div. Hys., Springfield,
McDougal Hartmann Co., 1500 N. Adams St., Peoria, Ill., CA, **$1,283,940,** c.conc. 3.82 mi. U.S. 24, Peoria Co.;
Regenhardt Constr. Co., P.O. Box 440, Cape Girardeau, Mo., CA, **$678,298,** c.conc. 3.37 mi., c.conc. 4.05 mi. double box culvert and widening 1 bridge Ill. 130 Edwards Co. Bids Feb. 17, awarded Feb. 26. CD 2/23, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Roediger Constr. Co.,** 1737 Euclid St., Cleveland, O. CA **$4,000,000.** Cleveland Clinic HOSPITAL addn., CLEVELAND, O. Cleveland Clinic Foundation, C. M. Taylor, ex. dir., 2020 E. 93 St., Cleveland 6, O. Bids Feb. 15. CD 1/9.

▲ **Charles H. Shook, Inc.,** 582 W. 2 St., Dayton, O. CA Approx. $2,000,000. HOSPITAL addn., MIDDLETOWN, O. Middletown Hospital, Middletown, O. CD 10/20.

Good Homes, Inc., 1025 Circle Tower, Indianapolis, Ind. Owner Builds. **$600,000** 50 HOMES in northwest section of INDIANAPOLIS, IND.

Wirsching Realty Co., 727 Nottingham Cort, Indianapolis, Ind., Owner Builds, $500,000. 40 new HOMES in Speedway Homes addn., INDIANAPOLIS, IND.

Bowman Constr. Co., Marion, Ind., CA, **$500,000** or more, PLANT addn., MARION, IND. Anaconda Wire Cable Co., Marion, Ind. Awarded Feb. 20. CD 5/7/52.

Chell & Anderson, 176 W. Adams St., Chicago 3, Ill., CA, **$374,069,** Brook Park SCHOOL, 30 and Raymond Sts., LAGRANGE PARK, ILL. School District No. 95, 3524 Maple Ave., Brookfield, Ill. Bids Feb. 10, awarded Feb. 23. CD 1/19.

(Continued on page 72)

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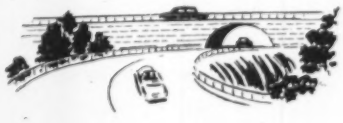

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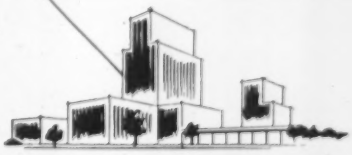

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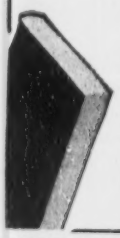

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☐ Davis—**Hdbk. of Applied Hydraulics**—$15.00 payable $5 in 10 days and $5 monthly

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Address .....
City .....Zone....State.....
Company .....
Position .....ENR 3-11

This offer applies to U. S. only

(Continued from page 70)

▲ **Gebhard-Berghammer, Inc.,** 5420 W. State St., Milwaukee 8, Wis., LB. Total **$3,500,000** general contract CLUBHOUSE, MILWAUKEE, WIS. Young Men's Christian Assn., 633 N. 4 St., Milwaukee 3, Wis. Bids Feb. 19. CD 1/25.

▲ **Biltmore Constr. Co.,** 17615 James Couzens St., Detroit, Mich. Owner Builds. **$1,750,000.** 200 brick, frame HOUSES, Lorenz and Couzens St. near 11 Mile Rd., ROYAL OAK, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

Ia., Newton—B.A. 4/1—City, City Hall, city water sys. expansion, incl. 20 in. pipe line from Metz well field standby emug. pumping equip., 2 new wells, etc. $450,000. John A. Burriss, Assoc., 202 Masonic Temple Bldg., Des Moines, consult. engrs. CD 10/15.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Orfei & Mariani,** 1156 Homer St., St. Paul, Minn. LB $506,393. 69,000 lin. ft. 9 in. V.S.P.;

Phelps-Drake Co., 1415 S.E. 8 St., Minneapolis, Minn. LB $733,611. 101,000 lin. ft. 9 in. V.S.P. for lateral and storm sewers, RICHFIELD (MINNEAPOLIS P.O.), MINN. Village, P. H. Haugen, clk., Richfield, Minn. Bids Feb. 23. CD 2/8.

▲† **Eugene Luhr & Co.,** Columbia, Ill., LB **$1,143,725,** est. $1,386,400, Oklahoma City Floodway Channel excav., Sect. II, North Canadian River, Inv. No. CIVENG-34-066-54-31, OKLAHOMA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids Feb. 25. CD 2/17.

▲† **U. S. Eng.,** Box 61, Tulsa 2, Okla., cancelled bids to have been opened Jan. 12, base hospital, Altus Air Force Base, Inv. Eng-34-066-54-13. ALTUS, OKLA. Est. $1,000,000. Project postponed indefinitely. CD 11/11.

Lippert Bros., 2800 N. Santa Fe St., Oklahoma City 5, Okla., CA **$607,667,** est. $701,250, grandstand, stage and offices at Fair Grounds, OKLAHOMA CITY, OKLA. City, City Hall, Oklahoma City, Okla. Awarded Feb. 23. CD 2/2, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

John T. Harris, McCook, Neb. Owner Builds. Approx. $500,000. 50 HOMES, McCOOK, NEB.

▲ **Custom Built Homes, Inc.,** 5500 Buena Vista St., Kansas City, Mo. Owner Builds. **$1,500,000.** 250 pre-hab. DWELLINGS at Stony Point Heights Dist., near KANSAS CITY, KAN.

Walter Kidde Constructors, 140 Cedar St., New York, N. Y. CA Est. **$500,000.** chemical mfg. PLANT, KANSAS CITY, KAN. Permatex Chemical Co., Ave. Y and E. 18 St., Brooklyn, N. Y.

▲ **H. M. Crocker,** 3312 N.W. 23 St., Oklahoma City, Okla. Purchase and Hire. **$3,527,000.** 415 HOMES, S. W. 38 and Portland Sts., OKLAHOMA CITY, OKLA. M. J. Young, 3312½ N. W. 23 St., Oklahoma City, Okla., archt. Awarded Feb. 24.

▲ **Leslie Crockett Constr. Co.,** P.O. Box 4036, Austin, Tex., LB **$410,850.** 2 story, approx. 16,000 sq. ft. Law Student's DORMITORY;

Yarbrough Constr. Co., P.O. Box 851, Austin, Tex., LB $738,785. 6 story, 40x230 ft. women's DORMITORY and 1 and 2 story 50x50 ft. connecting to Andrews DORMITORY;

R. P. Farnsworth Co., Inc., Box 850, New Orleans, La. LB **$934,500.** 4 story, partial bsmnt. 62,700 sq. ft. DORMITORY, 1 story, partial bsmnt. 16,400 sq. ft. CAFETERIA;

O. H. Cummins Elec. Co., South Lamar St., Austin, Tex. LB **$229,510,** electrical constr. in women's and men's dormitories, cafeteria and law-graduate dormitory, AUSTIN, TEX. Bd. of Regents, The University of Texas, Admin. Bldg., Austin, Tex. Bids Feb. 24. CD 1/19.

Houck Constr. Co., 3801 Bellaire Blvd., Houston, Tex. CA **$349,215.** Phase 1, 37 frame APARTMENT UNITS, concrete slab fdn., HOUSTON, TEX. H. R. Houck, Jr., 3801 Bellaire Blvd., Houston, Tex. CD 1/7.

▲ **Schneider Constr. Co.,** Box 13157, Houston, Tex., CA **$2,027,000,** est. $1,750,000. 1 and 2 story, 159,000 sq. ft. masonry, consists of 5 connecting bldgs., Foster Place Junior HIGH SCHOOL, Yellowstone and Scott Sts., HOUSTON, TEX. Houston Independent School Dist., 1300 Capitol St., Houston, Tex. Bids Feb. 17. CD 2/24, under LB.

▲ **Hudson Eng. Corp.,** 2711 Danville St., Houston, Tex. CA Approx. **$1,325,000.** natural gas processing PLANT, near MARSHALL, TEX. Woodlawn Processing Co., Marshall, Tex. CD 2/9.

Van Cleave Constr. Co., Box 12176, Houston, Tex. LB $541,185. two DORMITORIES, Alexander Hall for Boys and Suarez Hall for Girls, PRAIRIE VIEW, TEX. Agricultural & Mechanical College of Texas, 331 Admin. Bldg., College Station, Tex. Bids Feb. 23. CD 2/1.

FAR WEST

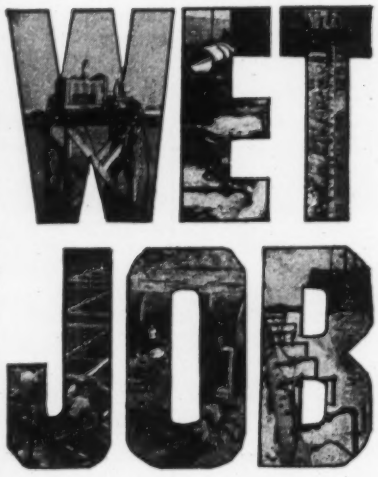
BIDS ASKED—HEAVY CONSTRUCTION

▲ † **California**—B.A. 3/25—U. S. Eng. 751 S. Figueroa St., Los Angeles, West embankment outlet works, etc. San Gabriel River Improvement, El Monte, Los Angeles Co., CIVENG-04-353-54-29, $5,000,000. CD 4/21/44.

BIDS ASKED—BUILDINGS

Calif., San Fernando—LABORATORY—B.A. 3/19—Los Angeles Co., Hall of Records, laboratory bldg. at

IF IT'S A



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▲ **Calif., Bakersfield** — HOSPITAL — B.A. 3/23 — Bd. Supervs., Kern Co., Court House, 5 story rein.-con. hospital. Extended date. C. B. Alford, Haberfield Bldg., archt. CD 2/17.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **CALIFORNIA**—State Div. Hys., P. Wks. Bldg., Sacramento,

MacDonald, Young & Nelson, Inc., 351 California St., San Francisco, and **Morrison-Knudsen Co.**, 74 New Montgomery St., San Francisco, Calif., LB **$4,194,461**, est. $5,600,000 ramp construction revision of distribution structure on Oakland Approach, Oakland-San Francisco Bay Bridge, Alameda and San Francisco Counties. Bids Feb. 24. CD 1/27.

▲† **Winston Brothers**, 1532 S. California Ave., Monrovia, Calif., CA, **$3,385,433**, est. $4,000,000, San Antonio Dam, Santa Ana River Basin, Corona, Los Angeles Co. CIVENG-04-353-54-24, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Feb. 19, awarded Feb. 24. CD 2/26, under LB.

† **Edward R. Siple**, 2545 San Fernando Rd., Los Angeles, Calif., LB **$887,677**, 30 mi. aviation fuel pipe line, Norwalk to El Toro Marine Base, Orange Co., CALIFORNIA. Dpt. Navy, San Diego, Calif. Bids Feb. 18. CD 1/19.

The Baldwin-Lima-Hamilton Corp., 2929 19 St., San Francisco, Calif., LB, **$948,180** (1) two 25,300 hp. vertical hydraulic turbines and governors;

The Elliot Co., 714 W. Olympic Blvd., Los Angeles, 15, Calif., LB, **$1,121,486**, (2) two 20,000 kva vertical water-wheel-drive synchronous generators, at Pilot Knob Hydro Plant on All American Canal, EL CENTRO, CALIF. Imperial Irrigation Dist., 125 S. 5 St., El Centro, Calif. Bids Feb. 23. CD 11/5.

▲ **Vinnell Co., Inc.**, 1145 Westminster Ave., Alhambra, Calif., LB, **$2,632,710**, steel plate pump delivery pipe lines (mortar lining alternate) at five pumping plants, LOS ANGELES, CALIF. Metropolitan Water District of Southern California, 306 W. 3 St., Los Angeles, Calif. Bids Feb. 23. CD 2/3.

George Miller Constr. Co., 3032 Bandini Blvd., Los Angeles, Calif., LB, **$588,529**, est. $200,000 Section 1, Unit B, La Cienega and San Fernando Valley Relief Sewer, LOS ANGELES, CALIF. City, City Hall, Los Angeles, Calif. Bids Feb. 17. CD 2/3.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Lindgren & Swinerton**, 1631 Beverly Blvd., Los Angeles, Calif., CA, **$2,000,000**, two MANUFACTURING BLDGS., (1) 130,000 sq. ft. (2) 26,000 sq. ft. and ADMINISTRATION BLDG., LENNOX, (BR. INGLEWOOD) CALIF. Robertshaw-Fulton Control Co., 3000 E. Imperial Hy., Lennox, Calif. Quinton Engineers Ltd., 812 W. 8 St., Los Angeles, engrs. Awarded Feb. 4.

▲ **James I. Barnes Constr. Co.**, 1119 Montana Ave., Santa Monica, Calif., LB, **$3,941,700** Reseda High SCHOOL, Reseda, LOS ANGELES, CALIF. Los Angeles Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids Feb. 24.

▲ **Hagstrom Constr. Co.**, 1567 Selby Ave., St. Paul, Minn., LB, **$4,099,000**, Jordan Downs HOUSING reconstruction, Proj. CA 1-4016, between 97 and 103 St. at Grape St., LOS ANGELES, CALIF. Housing Auth. of City of Los Angeles, Calif. 1401 E. First St., Los Angeles, Calif. Bids Feb. 23. CD 12/29.

▲ **Beverly Development Co.**, 8549 Wilshire Blvd., Los Angeles, Calif. Owner Builds, **$1,575,000**, 175 frame, stucco DWELLINGS, Lassalitte St. and Van Wig Ave., PUENTE, CALIF.

Milton Kauffman Constr. Corp., 2918 W. Compton Blvd., Gardena, Calif. Owner Builds, **$560,000**. 56 frame, stucco DWELLINGS, West 191 St., Tract 19102, TORRANCE, CALIF.

Devon Constr. Co., 739 N. Highland Ave., Los Angeles, Calif., CA, **$486,900**, 50 stucco DWELLINGS in Tract 17526, WEST COVINA, CALIF. Parkwood Covina III, 739 N. Highland Ave., Los Angeles, Calif.

CANADA

SOON LETS CONTRACT—BUILDINGS

▲ **Ont., Hamilton**—DEPARTMENT STORE—Simpson-Sears Ltd., 176 Yonge St., Toronto, soon lets contract, super-structure for 2 story, 2 penthouses, 353x378 ft., rein.-con., brick, stone department store, Barton St. and Fennell Ave. $2,000,000. F. S. Corley, c/o owner, staff archt. John B. Parkin & Assocs., 717 Church St., Toronto, archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Marwell Constr. Co., Ltd.**, 1500 West Georgia St., Vancouver, B. C., LB, **$1,598,362**, wharf constr., ESQUIMALT, B. C. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Feb. 10. CD 12/23.

▲ **Broadway Constr. Co.**, 282 W. Ontario St., Montreal, Que. Owner Builds. **$3,250,000**, 280 one story, bsmnt., 31x40 ft., 27x42 ft., concrete, brick, stone DWELLINGS, COTE ST. LUC, QUE. G. Jarry, 1044 Querbes Ave., Montreal, Que., archt.

Biltrite Constr. Inc., 4992 Dorval Ave., Cote St. Luc, Que. Owner Builds. $750,000, 50 one story, bsmnt.,

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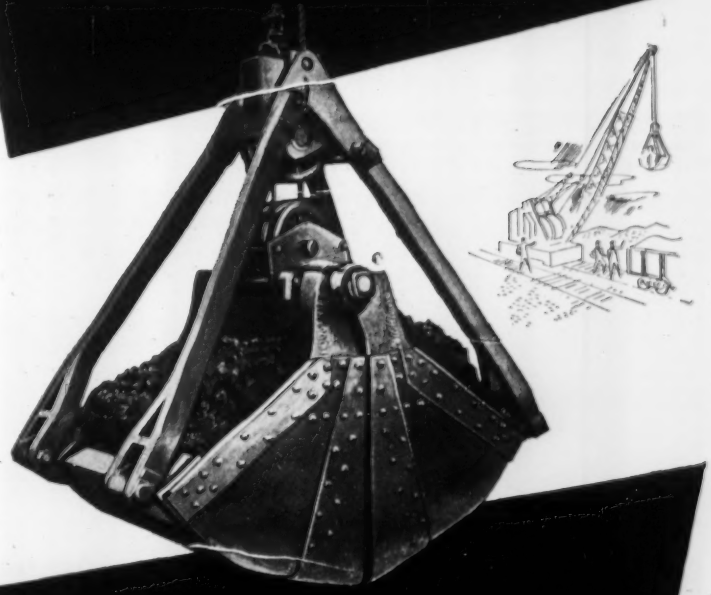

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30x40 ft., concrete, brick DWELLINGS, COTE ST. LUC, QUE.

▲ **Riviere Investments Corp.**, 1919 Levesque Blvd., St. Vincent de Paul, Que., Owner Builds, $4,475,000 350 HOUSING units of a total of 700 California style bungalows, ST. VINCENT DE PAUL, QUE. Rosenberg & Reich, 1226 St. Catherine St. W., Montreal, Que., archts.

Proposed Projects

WATER SUPPLY

▲ **Calif., El Centro**—City, 561 State St., $1,300,000 bond election Apr. 13, water sys. imprvs. Merrill B. Wittman, c/o owner, consult. engr. CD 12/18/52.

▲ **Tex., Fort Worth**—City, c/o W. O. Jones, mgr., water mains for Freeway, $40,000; misc. water mains, $700,000, Uehl Stephens, c/o owner, Dir. Water Dpt.; East Side water mains, $400,000, Carter & Burgess, 815½ Throckmorton St., consult. engrs.; Lake Worth Spillway, $50,000. Freese & Nichols, 407 Danciger Bldg., consult. engrs. CD 2/1.

SEWERS, WASTE DISPOSAL

▲ **Ark., Blytheville**—City, City Hall, sewage treatment plant and sewer lines, $1,000,000. Max Mehlburger, Pyramid Bldg., Little Rock, consult. engr. CD 4/1.

▲ **Calif., Vallejo**—Vallejo Sanitation & Flood Control District, City Hall, $6,770,000 bond election June 8, sewage treatment plant, Brown & Caldwell, 66 Mint St., San Francisco, consult. engrs. CD 11/9.

▲ **Ill., Naperville**—City, City Hall, sewage treatment plant, storm sewers, $1,000,000. Consoer, Townsend & Assocs., 351 E. Ohio St., Chicago, Zone 11, consult. engrs.

▲ **Ill., Streator**—City, City Hall, sewage treatment plant, $1,200,000. Warren & Van Praag, 253 S. Park St., Decatur, consult. engrs. CD 8/13/45.

BRIDGES

▲ **INDIANA**—State Hy. Comn., A. J. Wedeking, chn. State House Annex, Indianapolis, Zone 4,

Wayne Co.—Hy. bypass from Nixon Airport back to U. S. Rd. 40 east of U. S. Rd. 35 intersection, Richmond, $11,148,867;

9th St. overpass over C & O Ry., Richmond, $1,831,331; rein.-con bridge over White River, 1 St., to S. A. St. Richmond, $1,961,303. Carl Vogelgesang, c/o owner, ch. engr.

▲ **Mich., Bay City**—City and State, c/o City Manager, rein.-con., steel Veterans Memorial Bridge, $3,500,000. Ayres, Lewis, Norris & May, 500 Wolverine Bldg., Ann Arbor, consult. engrs.

▲ **O., Cincinnati**—City, City Hall, elimination of grade and constr. viaduct at Martin St. and L & N R. R., $1,725,000. T. J. Montgomery, city engr.

▲ **Wash., Seattle**—City, County-City Bldg., Seattle, Zone 4, bridge over Union Bay and Lake Washington Ship Canal. $8,500,000. W. E. Parker, city engr.

STREETS AND ROADS

▲ **INDIANA**—Indiana Toll Road Comn., A. J. Wedeking, chn. Old Trails Bldg., 309 W. Washington St., Indianapolis, Zone 4,

North South Highway across Indiana, approx. 300 mi., from near Hammond, Ind. to state line near Louisville, Ky. $300,000,000. J. E. Greiner Co., 1201 St. Paul St., Baltimore, Md., consult. engr.

▲ **Mich., Grand Rapids**—Rd. Comrs. Kent Co., Henry A. Johnson, chn., 30 mi. primary roads, bit. aggregate, $550,000; local road imprvs., 24 towns, $450,000; gravel roads, curbs, gutters, sewers, $300,000, Otto Hess, County Bldg., ch. engr. CD 1/30/53.

▲ **NEW YORK**—State Dpt. P. Wks., The Governor Alfred E. Smith State Office Bldg., Albany,

Erie Co.—Cherry St.-Kensington Ave. Arterial Hy.; 6-lane divided hy., 8 mi. long from Cherry St. and Michigan Ave. northeast to city line and then east to Genesee St. at Buffalo Airport, Buffalo. $44,877,000.

EARTHWORK, WATERWAYS

▲ **Mich., Bay City**—City, R. G. McGillivray, comr. Dpt. P. Wks., Saginaw River imprvs. 14 mi. dredging, 4 acre turning basin, 20 ft. deep 900 ft. long and max. width 330 ft., imprv. banks and docks, etc. $4,250,000.

AIRPORTS

▲† **N. Y., Newburgh**—MISCELLANEOUS FACILITIES—U. S. Eng., 80 Lafayette St., New York, Zone 13, plans by Mackenzie, Bogert & White, 5 E. 57 St., New York, Zone 22, misc. facilities, Stewart Air Force Base. $3,000,000-$5,000,000. CD 6/17.

PUBLIC BUILDINGS

▲ **Calif., El Monte**—SCHOOLS—El Monte School District, 200 E. Columbia St., $1,938,967 bond election May 21, school construction. CD 9/28/51.

▲ **Calif., Oxnard**—SCHOOL—Oxnard Union High School District, 5 and H Sts., $1,585,000 bond election Apr. 21, high school in Camarillo.

▲ **Ga., Milledgeville**—HOSPITAL—Baldwin Co., plans by Bothwell & Nash, 206 Roswell St., Marietta, hospital. $1,500,000. CD 5/19.

▲ **Ill., East St. Louis**—SCHOOLS—Bd. Educ., School District 189 of St. Clair Co., Lee G. Osborn, supt. Schools, $5,000,000 bond election Apr. 10 schools and school addns., incl. Senior High School, 51 and State Sts., replacing Robinson School, 15 St. and Bond Ave., 2 elementary schools for south end districts of Rush City and Denverside, Clark and Lawsdowne Junior High Schools addns. CD 2/26.

▲ **Ill., Moline**—SCHOOL—Moline School District, Bd. Educ., Moline, high school. $3,600,000.

▲ **Ind., Anderson**—SCHOOL—Anderson School City, G. E. Ebberrtt, supt., 520 W. 11 St., plans by Arthur Henning, Anderson Bank Bldg., Southside Junior High School, 29 and Meridian Sts. $1,000,000. CD 10/9.

▲ **Ind., West Lafayette**—UNION HALL—Purdue University, Bd. Trustees, West Lafayette, plans by Walter Scholer, 1117 State Ave., Lafayette, 2 story, brick, stone, rein.-con., structural steel union hall addn. $1,000,000. CD 11/22/43.

▲ **Mich., Dearborn**—SCHOOLS—City, Bd. Educ., 5757 Neckel St., voted $9,000,000 bonds Feb. 16, Northwest High School, Elementary School, Kindergarten and grade school, school addns.

Neb., Omaha—LIBRARY—University of Omaha, 60th and Dodge Sts., plans by John Latenser & Sons, 1307 Farnam St., library bldg. $960,000. CD 1/22/53.

▲ **N. J., Union**—COLLEGE—New Jersey State Bd. Educ., State House, Trenton, plans by Jay C. Van Nuys, 205 W. Main St., Somerville, and Lawrence C. Licht, 19 Knickerbocker Rd., Englewood, new buildings and site for Newark State Teachers College, Morris Ave. west of North Ave. $3,700,000. CD 10/16.

▲ **Pa., Phila.**—FEMALE and MALE BLDG. REMODELING—General State Auth., 18 and Herr Sts., Harrisburg, remodel Female Bldg., C-1 and C-5, $769,000; remodel Male Bldgs. E-2 and E-4, $937,000 at Phila. (Byberry) State Hospital. A. F. Jones, c/o owner, ch. engr. CD 2/10/47.

▲ **Va., Hampton**—HIGH SCHOOL—City School Bd., Hampton, plans by Williams, Coile & Blanchard, 3415 Virginia Ave., Newport News, 1 story masonry Junior-Senior High School. $1,500,000. CD 1/25.

▲ **Ont., Ottawa**—HIGH SCHOOL—Collegiate Institute Bd. of Ottawa, F. G. Patten, secy. 180 Bay St., plans by J. A. Ewart, 165 Sparks St., high school, St. Laurent Blvd., $1,500,000.

▲ **Ont., Toronto**—POST OFFICE—Dpt. P. Wks., Hunter Bldg., Ottawa, plans by Shore & Moffat, 79 Queen

(Continued on page 76)

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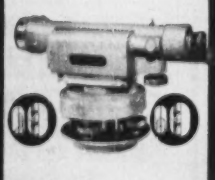

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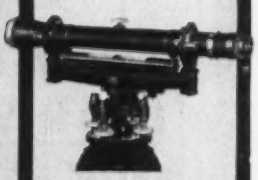

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Pittsburgh: American Blueprt., 110 Sixth St.
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MODEL 82A

This crawler-mounted, 3 cubic-yard per-minute Bucket Loader has the stability so often necessary in typical truck loading operations—in pits, on soft or rocky ground, etc. Built for heavy, continuous operations, it is economical enough to justify itself in intermittent service. Complete accessories are available, including single and double deck vibrating screens for loading, screening and scalping simultaneously.

Barber-Greene

Aurora, Illinois, U.S.A.

ALWAYS ASK FOR

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FABRICATION
ERECTION
DETAILING

Since 1915, Flint has been the Southwest's *complete* steel department store . . . for GALVANIZED and STRUCTURAL steel; WAREHOUSE steel; REINFORCING steel; PLATE steel. You'll find every size and shape of steel or fabrication facility you need at Flint! ONE call will secure all your needs. DELIVERY can usually be made from stock.

SERVING SOUTHWEST INDUSTRY SINCE 1915

FLINT STEEL CORPORATION
TULSA MEMPHIS

WISCONSIN-POWERED
LITTLEFORD TRAIL-O-ROLLERS

Put on the Pressure!

These road rollers, built by Littleford Bros., Inc., Cincinnati, are easily towed behind jeep or truck, traveling on demountable pneumatic-tired wheels. Hydraulic power lifts rubber-tired trailer wheels, drops rollers into position — handled by one man, in 5 minutes. Compaction variable from 75 to 160 lbs.

Each unit is powered by a model TF 2-cylinder Wisconsin Heavy-Duty Air-Cooled Engine. Features include tapered roller bearings at both ends of the crankshaft, fool-proof AIR-COOLING plus an easily-serviced, OUTSIDE magneto with impulse coupling for fast all-weather starts.

Write for 64-page catalog covering complete line of Wisconsin 4-cycle single-cylinder, 2-cylinder and V-type 4-cylinder models, 3 to 36 hp. Specify "WISCONSIN Power" for your equipment.

WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

(Continued from page 74)

St. E., post office and govt. office bldg., Adelaide and Victoria Sts., $1,000,000.

▲ Que., La Sarre—HOSPITAL—Quebec Dpt. Health, Quebec City, plans by J. C. Fortin, 240 4 Ave., Val d'Or, Que., 100 bed hospital, Macamic Road, $1,500,000. CD 9/26/51.

▲ Sask., Saskatoon—CITY HALL, etc.—City, W. J. Easson, purch. agt. plans by Webster & Gilbert, C.P.R. Bldg., city hall and civic auditorium. $1,000,000 CD 8/17/50.

▲ Que., Sherbrooke—UNIVERSITY—Dpt. P. Wks., Quebec City, unnamed university bldg. $1,000,000.

COMMERCIAL BUILDINGS

▲ Calif., Alameda—SUBDIVISION DEVELOPMENT—Alameda South Shore Land Co., c/o Alameda Realty Co., 1615 Oak St., subdivision development, incl. large dredge fill along south shoreline of city of Alameda between Maritime Training School and Bay Farm Island, $150,000,000. Kenneth Jones, 305 Grant Ave., San Francisco, consult. engr.

▲ Ill., Elgin—DIAL EXCHANGE—Illinois Bell Telephone Co., 206 W. Washington St., Chicago, Zone 6, plans by Holabird Root & Burgee, 180 N. Wabash St., Chicago, zone 1, 2 story bsmnt., dial exchange bldg. $2,900,000.

▲ Ill., Stickney—SHOPPING CENTER—Stickney Shopping Center, 3945 Wesley Ave., Berwyn, shopping center, incl. 18 stores and bowling alley, Harlem Ave. at 44 St. $2,000,000.

▲ Mo., St. Joseph—HOSPITAL—Sister's Hospital, 10 and Powell Sts., plans by Everett Johns, Empire Trust Bldg., hospital addn. $2,000,000.

▲ N. Y., New York—APARTMENT—Syndicate, c/o Kokkins & Lyras, archts., 4 Platt St., Zone 7, apartment house development, 399-423 E. 52 St. and 404-20 E. 53 St. $2,000,000.

▲ Pa., McKees Rocks—SHOPPING CENTER—Retail Center, Inc., Carlton House, Pittsburgh, plans by J. Kenneth Myers, 3915 Saw Mill Run Bldg., Pittsburgh, 1 and 2 story brick, block, steel shopping center, $2,360,000.

▲ Tenn., Knoxville—STORE—Rich's, Inc., Forsyth St., Atlanta, Ga., plans by Stevens & Wilkinson, 157 Luckie St., Atlanta, Ga. and Barber & McMurry, 2505 Kingston Pike S. W., Knoxville, department store, $6,000,000. CD 2/10.

▲ Tenn., Nashville—OFFICE—Life & Casualty Insurance Co., 459 Fourth Ave. N., office. $2,000,000.

▲ Tex., San Antonio—LABORATORY, etc.—Trinity University, c/o University Campus, plans by Harvey P. Smith, 1204 Natl. Bank Commerce Bldg., laboratory expansion, $1,000,000; chapel, $350,000; classroom bldg., $500,000, in 107-acre tract. CD 8/23/45.

▲ Wis., Milwaukee—DEPARTMENT STORE—T. A. Chapman Co., 407 E. Wisconsin Ave., Zone 2, plans by John Graham & Co., 1426 5 Ave., Seattle, Wash., and Brust & Brust, 135 W. Wells St., Milwaukee, Zone 3, assoc. archts., department store in "Schuster Shopping Center". $1,000,000. CD 2/8/52.

▲ Wyo., Casper—HOMES—H. J. Clare & H. J. Clare, Jr., 426 E. 11 St., 250 to 300 low-cost homes. $2,600,000.

INDUSTRIAL BUILDINGS

▲ Ill., Chicago—PLANT—Armour & Co., Union Stockyards, Chicago, Zone 9, rebuilding plant, $10,000,000.

▲ Ind., Michigan City—FACTORY—School Mfg. Co., 211 Schilter St., Chicago 10, Ill. Factory $1,000,000.

▲ Mich., Three Rivers—PLANT—Beechnut Packing Co., Canajoharie, N. Y., brick masonry food plant to process and pack coffee, peanut butter, gum, baby foods, and cereals, on 34 acre site, $1,750,000.

▲ N. Y., New York—WAREHOUSE—F. W. Woolworth Co., 223 Broadway, Zone 7, 3 story warehouse, 132 St., and New York, New Haven & Hartford R.R. right of way. $1,400,000. Alexander D. Crosett, 27 William St., Zone 5, engr.

▲ O., Painesville—SUB-STATION—Cleveland Electric Illuminating Co., Public Square, Cleveland, electrical sub-station on Fairport-Nursery Rd. $1,750,000. C. J. Beller, c/o owner, gen. supt. electrical and engineering operations.

▲ Pa., Pittsburgh—LABORATORY, etc.—Jones & Laughlin Steel Corp., Gateway Center Bldg., plans by Prack & Prack, 509 Martin St. N. S., Pittsburgh, 2 story, bsmnt., 55x182 ft., block, metal, steel laboratory; 1 story, 50x170 ft., brick, block office, Baldwin Twp. $1,500,000. CD 3/17/49.

UNCLASSIFIED

▲ Louisiana—GAS TRANSMISSION LINE—Texas Gas Transmission Corp., Melrose Bldg., Houston, Tex., 24 mi. 16 in. natural gas transmission line, near Bastrop, $1,051,000; 2,000 hp. compressor unit, near Bastrop, $245,000; purchase meter station, South Roanoke, $300,000.

▲ O., Sandusky — LIMESTONE QUARRY — Mitchell Crushed Stone Co., Mitchell, Ind., limestone quarry, 5 mi. west of here. $1,000,000.

▲ Tenn., Jackson—ELECTRIC LINES—City, Jackson, place downtown electric lines underground, $1,000,000.

▲ Va., Yorktown—HISTORIC AREA DEVELOPMENT—National Capital Parks, Dpt. Interior, Interior Bldg., 19th and C Sts. N.W., Wash. 25, D. C., developing historic area, incl. reconstr. various areas of 7,000 acre park. $3,000,000.

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
March 17 Maine
STREETS AND ROADS
March 16 Massachusetts

BIDS ASKED—BUILDINGS

▲ Conn., Stamford—SCHOOL—B.A. 3/31—At office F. N. Benevelli, city purch. agt., City Hall, Westover Elementary School, Stillwater Ave., for City Bd. Educ., 511 Broad St. $1,000,000. Extended date. William F. R. Ballard, 123 E. 77 St., New York 21, N. Y., archt. Fraioli-Blum-Yasselman, 113 W. 42 St., New York, N. Y., structural engrs. CD 2/25.

BUILDINGS

LOW BIDS AND CONTRACTS

Clark & Smith, Inc., 1372 Hancock St., Quincy, Mass. ▲ $967,715. Y.M.C.A. COMMUNITY CENTER, Coddington and Newcomb Sts., QUINCY, MASS. Young Men's Christian Assn., R. Hayward, chn. Bldg. Comn., 61 Washington St., Quincy, Mass. CD 12/8, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
March 23 Maryland
STREETS AND ROADS
March 16 Maryland — March 26 Pennsylvania

BIDS ASKED—BUILDINGS

▲ Pa., Washington—HOSPITAL, etc.—B.A. 3/25—Washington Hospital, Leonard Ave., 6 story brick, stone hospital, 1 story laundry and shop, $2,177,000. Plans deposit $50. Schmidt, Garden & Erickson, 104 S. Michigan St., Chicago, Ill., archts. CD 9/17/52.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ Andrew Catapano & Co., 88-43 76 Ave., Glendale, N. Y. LB $3,243,930, Contr. No. 2, constr. Long Island City Intercepting Sewers, Bowery Bay Sewage Treatment Works Exten., Queens Boro, ASTORIA, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Mar. 3. CD 2/4.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Wm. J. Barney Corp., 101 Park Ave. New York, N. Y. CA $1,250,000. 200,000 sq. ft. PLANT and OFFICE, MASPETH, N. Y. Canada Dry Ginger Ale, Inc., 100 Park Ave., New York, N. Y.

▲† J. Rich Steers Co., 17 Battery Pl., New York 4, N. Y. CA $2,036,000, MARINE TRANSFER STATION, NEW YORK, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. Bids Feb. 3. CD 2/5, under LB.

▲ Joseph Sager & Sons, 50 Grand Concourse, New York 51, N. Y. Owner Builds. $1,000,000. 14 story APARTMENT, for 119 families, Avenue of Americas and W. 16 St., NEW YORK, N. Y. Greenberg & Ames, 303 Fourth Ave., New York 10, N. Y., archts.

▲ Manzol, Inc., 33 A West St., Englewood, N. J., CA, $6,500,000, twenty 5 story, incl. 800-families APARTMENT on 20-acre tract at Culver-Audubon Aves., JERSEY CITY, N. J. College Towers Apartments, c/o Erwin Gerber Assocs., archts. 1180 Raymond Blvd., Newark, N. J.

Lone Oak Village Estates, c/o Percy Simon, archt., 362 Cedar Lane, Teaneck, N. J. Owner Builds. $900,000. 64 HOUSES on tract on Gary Dr., Lone Oak Rd. and Craig Rd., NEW MONMOUTH, N. J.

▲ Eastern Properties, 439 S. Washington St., Falls Church, Va. Owner Builds. $2,684,000. 244 brick veneer, frame detached HOMES, Franklin Park, ROCKVILLE, MD. Jack Blacker, 1125 12 St. N.W., Wash., D. C., archt.

SOUTH

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ E. V. Williams Co., 1269 E. Princess Anne Rd., Norfolk, Va., and W. H. Scott, Inc., Box 418, Franklin, Va., LB $1,646,869, paving, grading, drainage, fencing, etc. Naval Amphibious Base, NOY 78225, Spec. 37651, LITTLE CREEK, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Va. Knappen-Tippetts-Abbett-McCarthy, 62 W. 47 St., New York, N. Y. engrs. Bids Feb. 23. CD 1/27.

▲ FLORIDA—State Road Dpt., Tallahassee,
Industrial Constr. Co., 3050 4 Ave. South Minneapolis 8, Minn., LB, $426,151, 361.75 ft. bridge over Intracoastal Waterway (Smith Creek) at Bulow, Job 7954-150, Volusia Co.; LB, $936,309 bridges over Stranahan River (Intracoastal Waterway) and Mercedes River 999.25 ft. and 165.00 ft. respectively, State Rd. A-1-A, Job 8618-178; Fort Lauderdale, Broward Co.;
Duval Eng. & Constr. Co., Box 1588, Jacksonville, Fla., LB, $108,274, bridge riprap at Gilmore St. Bridge over St. Johns River in Jacksonville, Job 7202-186 Duval Co. Bid Feb. 25. CD 2/1.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
March 23 Wisconsin
STREETS AND ROADS
March 16 Ohio — March 18 Indiana
March 23 Wisconsin

BIDS ASKED—BUILDINGS

▲ Wis., Milwaukee—PLANT—B.A. 3/17—Luick Dairy Co., 505 E. Capitol Dr., Zone 12, 1 and 2 story, 160x180 ft. milk processing plant, $1,000,000. Johnson & Johnson, 111 W. Washington St., Chicago, Ill., engrs.

▲ Ind., Hammond—GENERATING PLANT—B.A. 4/7—Chicago District Generating Co., sub of Commonwealth Edison Co., 72 W. Adams St., Chicago 3, Ill., electric generating plant at Illinois-Indiana boundary line, $1,500,000. Sargent & Lundy, 140 S. Dearborn St., Chicago 3, Ill., engrs.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ OHIO—State Hy. Dpt., Columbus,
Foley Constr. Co., 5050 Orchard St., Cincinnati, O. CA $1,679,729, est. $1,830,600, c. conc. 3.695 mi. U. S. R. 50, Sect. 10.80, U-1100 (2), Hamilton Co.;
Kane, O'Horo & Haenny, Inc., 65 W. Indianola Ave., Youngstown, O., CA $776,630, est. $843,800, c. conc. base wid'n. and b. conc. surf. 3.863 mi. S.R. 7, Sects. (5.05-8.72), Mahoning Co., CA $937,618, est. $1,044,650, c. conc. base wid'n. and b. conc. surf. 3.3[illegible] mi. S.R. 7 Sects. (8.86-11.26), U-422 (8), U-524 (7), Mahoning Co.;
V. N. Holderman & Sons, Inc., 891 Oakland Park Ave., Columbus, O., CA $1,934,690, est. $1,939,900, c. conc. paving, constr. continuous concrete slab bridge with capped pile abutments and concrete piers, Bridge No. RO-23-49 over Branch of Indian Creek; continuous conerete slab bridge with capped-pile abutments and concrete piers, Bridge No. RO-23-49A on County Rd. over Branch of Indian Creek and concrete slab bridge with concrete substructure, Bridge No. RO-23-67 over North Branch of Indian Creek, 5.335 mi. U. S. R. 23, Sect. 4.29, OAA-F-11 (12), Ross Co., Grand total $5,328,667. Bids Feb. 23. CD 3/2, under LB.
James McHugh Constr. Co., 6449 S. South Park St., Chicago, Ill., LB $775,230 (1) single type interceptor sewer; LB $998,990 (2) double type interceptor sewer, HAMILTON, O. City, Municipal Bldg., Hamilton, O. CD 6/1/49.

▲ I. E. Baushke Co., Benton Harbor, Mich. LB, $86,184. Contr. 3, 4 pump houses, booster station, foundations for 3 elevated tanks;
Dunigan Brothers, Jackson, Mich. LB $679,060. Contr. 4 East, 152,000 ft. 4-to 16-in. c.i. mains;
Haines & Haines, Elkhart, Ind. LB $710,075. Contr. 4, 120,500 ft. 4-to 12-in. c.i. mains, South, 37,400 ft. 4-to 16 in. c.i. mains, Euclid Center, 37,900 ft. 4-to 8-in. c.i. mains, North;
Layne-Northern Co., 721 Illinois St., Aurora, Ill. LB $34,750. Contr. 5, 3 test wells, 4 final gravel packed deep wells, production pumping tests;
Pittsburgh-DesMoines Steel Co., 38 S. Dearborn St., Chicago, Ill. LB $189,700. Contr. 6, 3 steel elevated tanks, BENTON, MICH. Benton Twp., 1056 Territorial Ave., Benton Harbor, Mich. Bids Feb. 22. CD 1/12.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Benton Building Co., 18320 Lanken Ave., Cleveland, O. Own Forces. Approx. $1,500,000. 282-suite, forty-seven 6-suite bldgs., brick, garden type APARTMENT DEVELOPMENT, MAYFIELD HEIGHTS, O. Benton Lefton, c/o owner, archt. Paul Hansgen, c/o owner, engr.

▲ L. Wolf & Sons, 4376 Archer Ave., Chicago, Ill., Own Forces, $1,500,000. 100 HOMES, CHICAGO, ILL.
Thomas J. Higgins Bldg. Co., Inc., 6122 S. Hermitage St. Chicago, Ill., Own Forces, $900,000, 60 HOMES, Central Park and 112 Sts., CHICAGO, ILL.

▲ Sumner S. Sollitt Constr. Co., 307 N. Michigan Ave., Chicago, 1, Ill., LB, $5,370,000. four APARTMENTS Gov. Henry Horner Homes, Lake St., Ashland Ave., CHICAGO, ILL. Chicago Housing Auth., 608 S. Dearborn St., Chicago, Ill. Bids Feb. 23. CD 1/26.

▲ Carl E. Erick Son Co., 4657 N. Ravenswood, Chicago 40, Ill., CA $1,000,000, NURSES' HOME and SCHOOL, RECREATION BLDG., CHICAGO, ILL. Alexian Brothers Hospital, 1200 Beldon St., Chicago, Ill. Bids Feb. 16 awarded Feb. 19. CD 1/19.

▲ C. U. & Brent Nilsson, Highland Dr., Northbrook, Ill. Own Forces, $2,000,000, 65 HOMES, WILMETTE, ILL.
Henry DeKonigg Constr. Co., 220 Municipal Court Bldg., Ann Arbor, Mich. CA $990,000. 3 story, brick, steel, concrete Phoenix Memorial LABORATORY, ANN ARBOR, MICH. University of Michigan, Bd. Regents,

(Continued on page 80)

GAS STORAGE TANKS

* Whether you want the conventional high - pressure units or something special—send us your inquiries. COLE can build you the kind of High-pressure tanks or vessels you require . . . any-size, any shape, any metal.

Our 98 years experience in the design and fabrication of metal tanks may be of help to you. Write for catalog—"Tank Talk."

R. D. COLE MFG. CO.
NEWNAN, GA., Established 1854
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DESIGNERS AND BUILDERS OF DREDGING EQUIPMENT SINCE 1905

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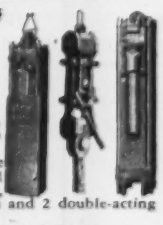

Now made in complete standardized line of 11 double-acting hammers, 5 single-acting hammers and 2 double-acting extractors.
Write for free descriptive Bulletins.
Also builders of coal and ore bridges, bulk material unloaders, bridge operating mechanisms, hoists and marine equipment, and specially designed machinery.
McKIERNAN-TERRY CORP.
13 Park Row — New York 7, N. Y.

We grind truck axles to

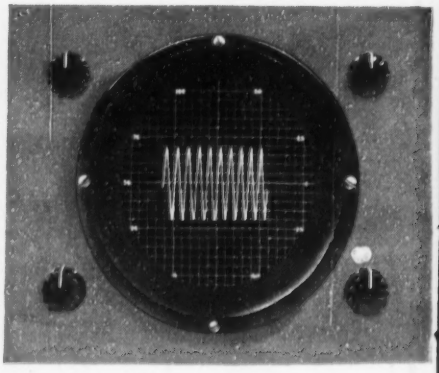
in the new Timken-Detroit indoor proving ground . . . and only

We jounce, twist and grind them. We abuse, torture and ruin them. We duplicate any on-the-job hauling situation . . . then add several special brutal tests of our own.

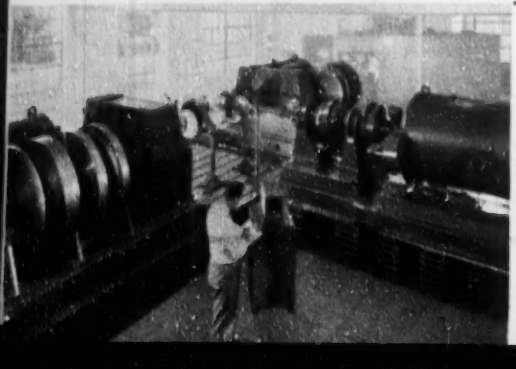
And for good reasons! We can assure you in advance that a Timken-Detroit axle can take a harder beating on the job it was built for than any other axle made!

We capsuled a multi-thousand acre proving ground into one room. Here our engineers put 50 years of experience in building axles for trucks, buses and trailers to work. Here the axles and gearing are subjected—*indoors*—to any *outdoor* hauling condition . . . and scientifically analyzed.

It's research to the "umpteenth" degree. But *you* enjoy: longer truck life; less maintenance, repairs and downtime; lower operating costs. That's why the smart money of truck builders and owners rides on Timken-Detroit axles and gearing.



Whatever you haul . . . simulated service conditions show up electronically on a screen like this. For instance—a heavily loaded truck on a bumpy, twisting road—then on a level express highway or long grade. What happens to the axle and gearing is measured, charted with absolute scientific accuracy.



TDA proves axle quality and performance in this "Torture Chamber"

Here we simulate actual highway conditions . . . test quality and performance of axles under any hauling situation, such as duplicating the kinetic energy of 80,000 lbs., G.C.W., at 60 m.p.h. All tests are repeated hour after hour with an automatic cycling control.

You're hauling overburden . . . you want axles that can get you up, out and on the road—fast . . . with few shifts, low engine r.p.m. and skimpy gas consumption. You want to stay on the job . . . with little expense for maintenance or repairs plus long axle life. You want Timken-Detroit "Torture-Tested" axles with Hypoid gearing!

You're hauling wet concrete . . . you can't afford axles that "conk out" enroute. You want axles you know *for sure* will take off and get the mix to the job—*on time*—ready to pour. You don't want costly maintenance and repairs or shoptime. You want rugged Timken-Detroit "Torture-Tested" axles with Hypoid gearing. They save you money.

You're hauling cement . . . you want axles that can get the load up and out of anywhere . . . then speed it to the job and get back quick. You don't want to beat your engine to death . . . or have profit-eating maintenance, repairs or downtime. You want axles that can stand up—Timken-Detroit "Torture-Tested" axles with Hypoid gearing.

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TIMKEN DETROIT AXLE DIVISION
ROCKWELL SPRING AND AXLE COMPANY
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The Accepted TDA CO *Standard*

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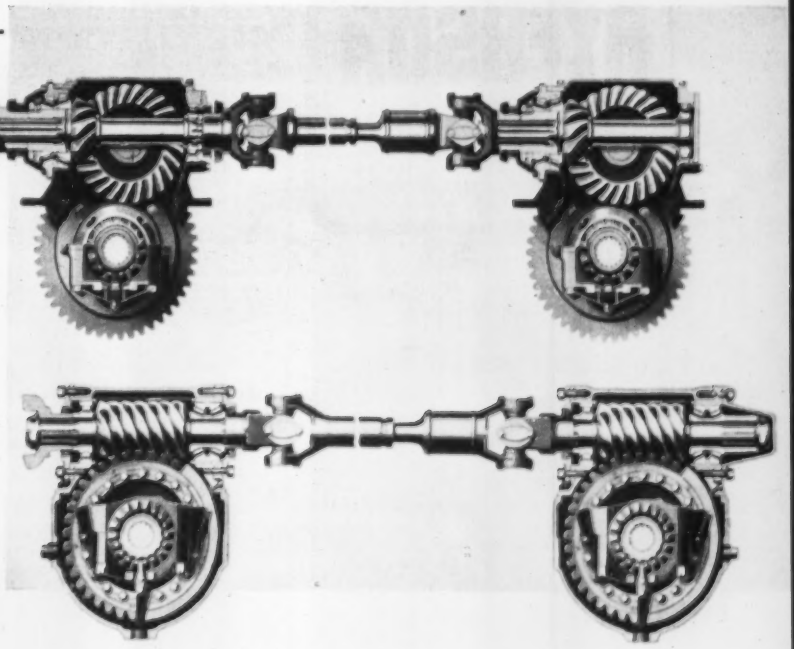
"TORTURE-TESTED"
to Save Money on the Job

WORLD'S LARGEST MANUFACTURERS OF AXLES FOR TRUCKS, BUSES AND TRAILERS



For "Million Mile" performance . . . your choice of two types of Timken-Detroit Tandem Drive Rear Axle Units

1. Top-mounted hypoid-helical double-reduction final drive. First reduction is hypoid gear and pinion—second is helical spur-gearing. Hypoid gearing, developed for heavy-duty trucks by Timken-Detroit, assures outstanding performance and low maintenance costs for operators everywhere. Large pinions, greater tooth contact give TDA hypoid-helical gearing the ability to stand the "gaff" of extreme shock loads and hard, gruelling hauling service.

2. Famous *patented* FJ worm gearing, pioneered by Timken-Detroit. "Through Drive" type . . . direct transmittal of engine torque through forward driving axle to rear driving axle. Permanently silent . . . simple, sturdy . . . stands extreme shock-loads without damage. Large diameter worm and worm wheel . . . increased capacity roller bearings . . . easy lubrication . . . light weight make FJ highly desirable for high speed service on any kind of grades.

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Foundation Investigations for New Plant Sites—Landslide Studies—Analyses of Foundation Failures—Design of Embankments and Earth Dams—Compaction Control—Special Soil Mechanics Studies

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Consulting Engineers
98 Greenwood Ave., Montclair, N. J.
2649 North Main St., Houston, Texas

(Continued from page 77)

W. K. Pierpont, vice pres., Ann Arbor, Mich. CD 2/25.

Cyril V. Jason, 1025 Whittier St., Grosse Pointe, Mich. Owner Builds. $900,000. 100 frame HOMES, John R. south of 11 Mile Rd., ROYAL OAK, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
March 19 North Dakota
STREETS AND ROADS
March 16 Colorado March 19 North Dakota

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† Peter Kiewit Sons Co., 1024 Omaha Natl. Bank Bldg., Omaha, Neb., LB $1,647,278, multi-purpose dock, Inv. 25-066-54-4, Ellsworth Air Force Base, RAPID CITY, S. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Mar. 2. CD 2/1.

J. M. Dellinger, Inc., Box 4227, Corpus Christi, Tex. CA $981,520, 48 in. water main from Calallen to Clarkwood, CORPUS CHRISTI, TEX. City, Corpus Christi, Tex. Bids Feb. 17. D 2/24, under LB.

BUILDINGS

BIDS ASKED—BUILDINGS

▲ Foley Bros., Inc., Vermilyea Bldg., Pleasantville, N. Y., and Foley Bros., Inc., 900 New York Bldg., St. Paul 1, Minn. CA Est. $300,000,000. general contract TACONITE PROCESSING PLANT and AUXILIARY BLDGS., AURORA, MINN. Erie Mining Co., (Bethlehem Steel Corp., Youngstown Sheet & Tube Co., Interlake Iron Corp., The Steel Co. of Canada), c/o Pickands, Mather & Co., Union Commercial Bldg., Cleveland, O. CD 12/7, under CA.

▲ Fleisher Eng. & Constr. Co., Builders Exchange Bldg., Minneapolis, Minn. and C. A. Peterson & Son, National Bldg., Minneapolis, Minn. CA $1,752,000. general contract high SCHOOL, HOPKINS, MINN. Gd. Educ., R. Child, clk., Hopkins, Minn. Bids Feb. 25. CD 2/8.

▲ Jones-Hettelsater Constr. Co., 1701 Baltimore St., Kansas City, Mo. CA Est. $1,500,000. 2,000,000 bu. SOYBEAN ELEVATOR, KANSAS CITY, MO. Ralston Purina Co., E. G. Hotchkiss, mgr., 2334 Rochester St., Kansas City, Mo.

▲ R. P. Farnsworth, Inc., Box 850, New Orleans, La., CA $923,800, general constr. men's DORMITORY and CAFETERIA BLDG.;
Yarbrough Constr. Co., 5th and Navasota Sts., Austin, Tex., CA $725,285, general constr. WOMEN'S DORMITORY, AUSTIN, TEX. Bd. Regents, University of Texas, Admin. Bldg., Austin, Tex. Bids Feb. 24, awarded Feb. 27. CD 3/1, under LB.

▲ Rust Eng. Co., 4219 Yoakum St., Houston, Tex., CA $3,250,000. Petrochemical PLANT for methyl mercaptan production, TEXAS CITY, TEX. Pan-American Refining Corp., Texas City, Tex.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲ California—B.A. Early in March—United Water Conservation District, 806 Railroad Ave., Santa Paula, construction of Santa Felicia Dam and appurtenant works on Piru Creek, tributary of Santa Clara River, about 5 mi. north of town of Piru, Ventura Co. Plans deposit $25. Julian Hinds, c/o owner, gen. mgr. and ch. engr. CD 8/19/52.

▲† California—B.A. 3/30—U. S. Eng., 751 S. Figueroa St., Los Angeles, constr. Los Angeles River Channel Improvement, 7 St. to 2 St., Long Beach, Los Angeles Co., CIVENG-04-353-54-30. $4,000,000. CD 1/20/45.

BIDS ASKED—BUILDINGS

▲ Calif., Palmdale—WAREHOUSE—B.A. 3/23—North American Aviation, Inc., 5601 W. Imperial St., Inglewood, industrial warehouse at Palmdale Airport, $2,000,000. Daniel, Mann, Johnson, Mendenhall, 4201 Sunset Blvd., Los Angeles, archts.

▲† Idaho, Arco—BUILDINGS, etc.—3/31—Atomic Energy Comm., Idaho Operations Office, 550 2 St., buildings, area services and facilities for initial engine test area of Aircraft Nuclear Propulsion Proj. AT (10-1)-685, $2,750,000. Plans deposit $100. CD 2/11.

SOON LETS CONTRACT—BUILDINGS

▲ Wash., Seattle—CLUB—Washington Athletic Club, 6 Ave. and Union St., soon lets contract, 6 story, 60x120 ft. steel frame club bldg. addn. $1,500,000. Bain & Overturf, 700 Marion St., archts. CD 10/23.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ NEVADA—State Hy. Dpt., State Office Bldg., Carson City.
Morrison-Knudsen Co., Inc., 319 Broadway, Boise, Idaho, CA $1,191,336, constr. portion State Hy. Sys., from 3 mi. east to 9½ mi. east of Sparks, Rte. Sect. 001-1 Control Sect. WA-03, Proj. No. FI-I-001-1 (9), St.

(Continued on page 82)

Contractor Reports:

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- Comfortable working height—reduces fatigue, no stooping
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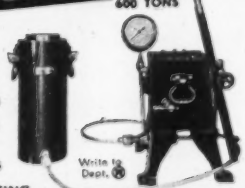

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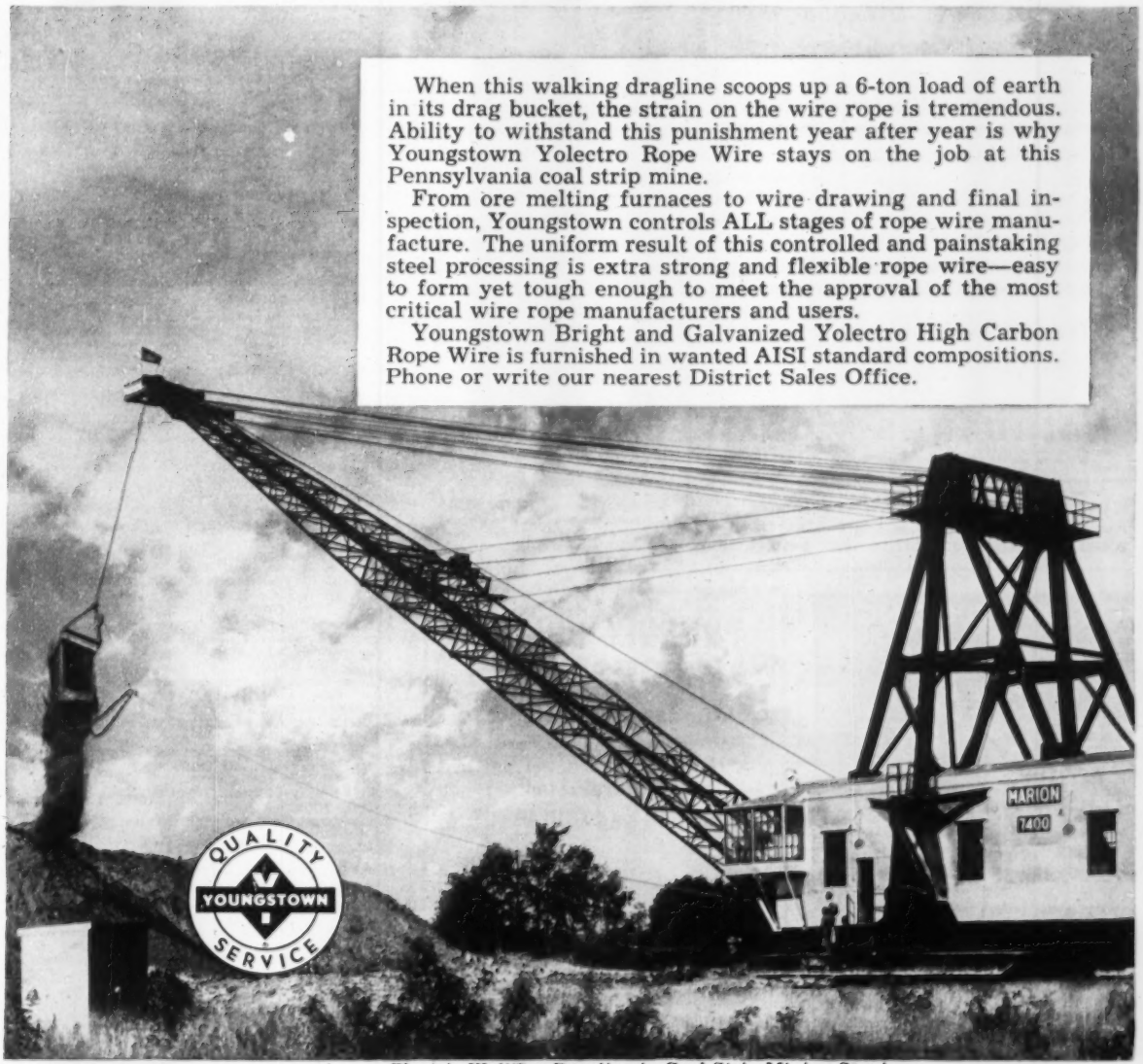

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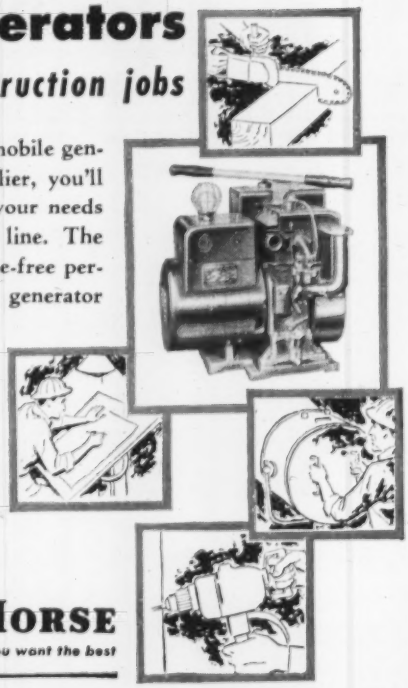

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We Get Into The Earth
PENNSYLVANIA Drilling CO.
DRILLING CONTRACTORS AND MFRS.
PITTSBURGH 20, PA.

(Continued from page 80)

Hy. Contr. No. 889, Washoe Co. Bids Feb. 25. CD 2/10.

▲ **Vinnell Company, Inc.**, 1145 Westminster Ave., Alhambra, Calif., CA, **$2,632,710**, steel plate pump delivery pipe lines (Mortar lining alternate) at five pumping plants, LOS ANGELES, CALIF. Metropolitan Water District of Southern California, 306 W. 3 St., Los Angeles, Calif. Bids Feb. 23, awarded Feb. 26. CD 3/1, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Kitcheen-Phillips Constr. Co., Inc.**, 1706 W. Buchanan St., Phoenix, Ariz., LB **$2,727,160**. TEST FACILITY BLDG. adjacent to Sky Harbor Airport, PHOENIX, ARIZ. Airesearch Mfg. Co. Division of Garrett Corp., 9851 Sepulveda Blvd., Los Angeles, Calif. Bids Feb. 26. CD 1/26.

▲ **Howard S. Wright & Co.**, 407 Yale Ave. N., Seattle, Wash., and **American Pile Driving Co.**, Everett, Wash., CA, Est. **$10,000,000** incl. equipment. PAPER PLANT addn. to house 2 addnl. paper machines, EVERETT, WASH. Scott Paper Co., Everett, Wash.

▲ **Don JaRan Constr. Co., Inc. & Peerless Building Corp.**, 8660 Wilshire Blvd., Beverly Hills, Calif. Owner Builds. **$1,102,500**, 140 stucco DWELLINGS in Tract 16757, COMPTON, CALIF.

M. & K. Corp., 200 Financial Center Bldg., San Francisco, Calif., CA, **$920,713**, HIGH SCHOOL, Enterprise, REDDING, CALIF. Shasta Union High School District, Redding, Calif. Bids Feb. 23, awarded Feb. 24. CD 2/10.

CANADA

BIDS ASKED—BUILDINGS

▲ **B. C., New Westminster**—SCHOOL—B.A. 3/31—Bd. School Trustees of School District No. 40, E. N. Chapple, secy., Senior High School, 10 Ave. and 8 Sts. $1,490,000. Plans deposit $100. E. Evans & Son, 110 West Pender St., Vancouver, archts. CD 2/15/52.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Quality Constr. Ltd.**, 15 Newby Lane, Toronto, Ont., CA, **$1,129,000**. HOUSING DEVELOPMENT at Western limits, NEWMARKET, ONT. Willow Subdividers Ltd., 30 Eglinton Ave., Toronto, Ont.

▲ **Marcel Poirier**, 10472 Laverdure Ave., L'Abord A Plouffe, Que., Owner Builds, **$1,850,000**, 200 concrete, brick, stone BUNGALOWS, L'ABORD A PLOUFFE, QUE.

▲ **Laval Development, Inc.**, 401 Blvd. des Prairies, Laval de Rapides, Que., Owner Builds, **$1,000,000** HOUSING DEVELOPMENT, LAVAL DES RAPIDES, QUE. Leo Giroux, 401 Blvd. des Prairies, Laval des Rapides, Que., archt.

▲ **Immeubles Latreille Rgd.**, 17 Levesque Blvd., Point Viau, Que., Owner Builds, **$1,000,000**, 120 25x37 ft., concrete, brick BUNGALOWS, LAVAL DES RAPIDES, QUE.

A. Cohen Constr. Co., 4800 Maplewood Ave., Montreal, Que.; Owner Builds, **$900,000**, 82 suite APARTMENT BLOCK, Graham Blvd., MOUNT ROYAL (MONTREAL), QUE. Ben-Ami Shulman, 5174 Cote des Neiges Rd., Montreal, Que., archts.

▲ **Harvey Realties Co. Ltd.**, 400 Oak St., St. Lambert, Que., Owner Builds, **$3,000,000**, 250 one and one half story concrete, brick, stone BUNGALOWS, ST. BRUNO, QUE. E. Bucold, 6904 Molston St., Montreal, Que., archt.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **S. Macri Constr. Co.**, Anchorage, Alaska, LB **$719,242**, est. $886,607, 22,448 ft. 8- to 24-in. concrete and 31,477 ft. 20 and 30 in. steel coated pipe sewers to outfall in Knik Arm, Inv. 54-74, Elmendorf Air Force Base, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Feb. 24. CD 2/3.

† **Chris Berg & Assocs., Inc.**, 2730 Westlake Ave. N., Seattle, Wash., LB **$729,325**, est. $765,325, 2 story, bsmnt., 48x120 ft., rein.-con., masonry laboratory bldg.; 1 story, 38x100 ft. supply bldg.; 1 story, 38x100 ft. shop 1 story, 13x24 ft. storage bldg., for Arctic Aeromedical Lab. Inv. ENG-95-507-54-76. Ladd Air Force Base, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Feb. 25. CD 1/27.

† **S. Macri & Sons**, P.O. Box 938, Anchorage, Alaska, CA **$717,764**, Air National Guard facilities at International Airport, Inv. 54-41, ANCHORAGE, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Feb. 18. CD 2/25, under LB.

PUERTO RICO

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **J. R. Nieves & Co.**, Arroyo, Puerto Rico, LB **$1,900,000**. 2nd phase, Nemesio Canales HOUSING 21 bldgs., 390 apartments, low rent housing, SAN JUAN, PUERTO RICO, Municipal Housing Auth. of San Juan, Puerto Rico, Augusto Plard, c/o owner, ch. archt. Frank Rullas, c/o owner, ch. engr. Bids Feb. 18. CD 1/21.

(Proposal Advertisements see pp. 90 and 91)

UNIT PRICES

New sewerage system averages $89 per person, Wash.

A complete sewer system and treatment plant for a design population of 1,500 will be installed by the town of Bingen, Washington. The town, with a present population of 736, has no existing sewers.

Cornell, Howland, Hayes & Merryfield, Corvallis, Oregon are the consulting engineers.

The first contract let at $42,337 calls for construction of a primary treatment plant which will handle an average of 0.225 mgd.

The second award totaling $91,478, includes materials and insulation for 9,750 lin ft of 8-in. to 21-in. concrete and cast iron sewer pipe and appurtenant work.

Ten bids were entered on the sewage treatment plant contract and fourteen on the sewage distribution system. R. L. Moss was awarded both contracts for a total of $133,816 although his bid was second low on the treatment plant

The complete job is scheduled to take 210 days

Bidders include:

Sewage treatment plant

1	Valley Const. Co., Seattle, Washington	$40,77
2C	R. L. Moss & Co., Zenith, Washington	42,33
10	P. S. Lord, Portland, Oregon	59,55

Bids: 2-9-54 Item	Unit	Quantity	Unit Prices 1 C	2
Commutator	ls	1	$2,572	$2,603
Sludge pump	ls	1	1,014	1,133
Clarifier mechanism	ls	1	4,591	4,160
Chlorination equipment	ls	1	1,519	1,751
Excavation & backfill	ls	1	2,435	2,150
Plant building	ls	1	28,641	30,540

Sewers

1C	R. L. Moss & Co., Zenith, Washington	$91,478
2	Jeske Bros. & Coast Const. & Excavating Co., Junction City, Oregon	96,543
14	Deer Construction Co., Seattle, Washington	134,053

Bids: 2-9-54 Item	Unit	Quantity	Unit Prices 1 C	2
Trench exc & cl B backfill				
0'-6'	lf	9,500	$0.65	$0.65
6'-8'	lf	4,280	0.75	0.75
8'-10'	lf	5,520	1.00	1.00
10'-12'	lf	2,830	1.10	1.25
12'-14'	lf	1,620	1.20	2.00
14'-16'	lf	560	1.60	2.50
16'-18'	lf	125	2.90	4.00
Trench exc & cl A backfill				
0'-6'	lf	1,080	1.30	1.15
6'-8'	lf	1,610	1.50	1.25
8'-10'	lf	320	1.80	1.50
10'-12'	lf	145	1.90	2.00
Gravel base	lf	10,100	0.10	0.25
Gravel foundation	cy	50	3.50	3.00
Rock excavation	cy	600	5.50	10.00
Sewer pipe in place,				
6" concrete	lf	8,430	0.90	1.00
8" concrete	lf	14,900	1.10	1.10
10" concrete	lf	2,120	1.35	1.30
12" concrete	lf	2,150	1.60	3.00
8" cast iron	lf	180	4.50	4.00
Concrete tees				
8"x8"x6"	ea	235	1.00	2.50
10"x10"x6"	ea	20	1.50	3.00
12"x12"x6"	ea	2	3.00	4.00
Conc wye, 6"x6"x6"	ea	10	1.00	3.00
Conc pipe plugs, 6"	ea	270	0.50	0.25
Conc bends, 6½"	ea	270	2.50	2.50
Manhole construction				
std precast, 0'-4'	ea	50	125.00	100.00
drop MH, 0'-4'	ea	16	175.00	50.00
additional MH depth	lf	320	11.00	13.00
Remove & replace asphalt pavement	lf	610	2.05	1.10
Remove asph pavement	lf	1,650	1.25	0.25
Remove & replace gravel	cy	1,500	3.00	2.50
Rem & replace sidewalks	lf	100	0.65	3.00
Remove & replace curbs	lf	80	2.50	2.00
RR crossings, main track	lf	115	30.00	30.00
spur track	eg	3	200.00	400.00
Swale crossings, main #1	ls	1	1,215	1,100
plant influent	ls	1	450.00	400.00
Diversion manhole	ls	1	500.00	600.00
Outfall structure	ls	1	245.00	250.00

Water supply bids vary widely on California road job

Bids on a lump-sum item for developing a water supply and furnishing water equipment sharply illustrated the fact that no two contractors estimate alike. Quotations on this item, which was the only lump sum item in the $224,384 contract ranged from $375 to $20,000 for an average of more than 100% difference between each of the bids.

Work consists of 13 miles of widening and surfacing with asphalt concrete on existing asphalt pavement and on untreated rock base. Also included are construction of cement concrete curbs, gutters, and sidewalks. All materials will be furnished by the contractor.

On the total price of the contract, bidding was fairly close with only 4.6% separating the low and second low bids. George Savala Paving Co. entered the low bid on the contract awarded by the California State Highway Department.

Skilled labor will receive $2.79 per hr; semi-skilled, $2.50 per hr; and common labor, $2.05 per hr. The job is to take 140 days.

Bidders include:

1C	George Savala Paving Co., Hawthorne, Calif.	$224,384
2	M. S. Mecham & Sons, South Gate, California	235,109
8	Robert E. L. Parker Co., Claremont, Calif	291,698

Bids: 1-21-54 Item	Unit	Quantity	Unit Prices 1 C	2
Remove concrete	cy	1,000	$5.00	$6.00
Clearing & grubbing	sta	68	30.00	15.00
Roadway excavation	cy	18,000	1.60	1.80
Structural excavation	cy	60	5.00	3.50
Compact original gravel	sy	20,000	0.09	0.06
Develop water supply & furn water equipment	ls	1	750.00	4,000
Apply water	mgal	650	1.25	2.00
Finish roadway	sta	68	12.00	15.00
Untr rock base	t	10,500	2.75	2.65
Asphalt concrete	t	15,000	4.75	5.00
Liquid asph SC-2	t	10	42.00	30.00
Asphalt emul	t	30	60.00	45.00
Struct PCC, class A	cy	100	45.00	50.00
Curbs, gutter, sidewalk PCC class B	cy	3,500	22.50	23.00
Reinforced concrete pipe				
15"	lf	40	8.00	7.00
18"	lf	8	9.00	8.00
Bar reinforced steel	lb	470	0.40	0.11
Misc iron & steel	lb	480	0.50	0.35
Adjust MH to grade (sanitary sewers & storm drain)	ea	34	25.00	30.00

TO CUT TRUCKING COSTS

TandemTrac

The ALL NEW TANDEM you can AFFORD

LOW INITIAL COST
LOW OPERATING COST
LOW MAINTENANCE COST

Learn how these (and many other) features can boost ton-mile profits

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DUAL DRIVE TANDEMS
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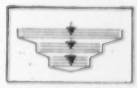

Flat-leaf, progressive springing means empty vehicle gets smooth, resilient ride. Maximum payloads get full, graduated suspension. Load and body damage goes down, ton-mile profits go up.

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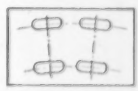

TandemTrac automatically guides wheels around highway curves, aligns them on the straightaway. Unbelievable tire life, greater fuel mileage, mean money saved on all hauling jobs.

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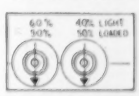

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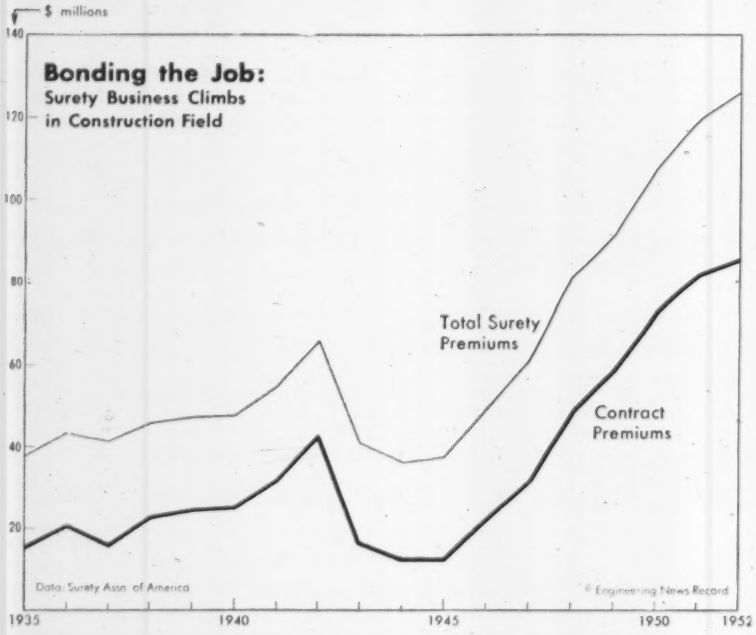


What's good for the client is good for the contractor

Surety contract bonds are growing more important as construction heads toward tougher competition

Each year the business of surety bonding is becoming more important to construction. One way you can measure this is to chart the fast increase in surety premiums arising out of construction, as compared with the much slower rise in total premiums paid for surety bonds (above).

Though this fast growth in surety premiums would naturally go along with the great increase in dollar volume of construction over the last two decades, surety contract premiums have also increased in relation to volume of new construction during the last few years. Actually, this rise in premium volume understates the increase in the amount of bonding that has been done, because rates have been reduced progressively since 1936.

Although most contractors are familiar with surety bonds, they are likely to come into contact with them more often, now that the construction business is heading into a more competitive period that will put contractors to the severest test they have undergone since 1950 (ENR Feb 18, p. 272).

• **What surety is**—The surety companies will provide part of that test. To understand why, you have to know something about surety:

First, surety is not insurance. You don't buy a contract bond because you want to insure yourself against danger, as you buy insurance; you buy it because somebody else wants protection. Instead of two parties being involved—a policyholder and an insurance company—there are three: (1) the client for whom you are doing the job (technically called the "obligee"); (2) yourself (called the "principal"); and (3) the "surety."

There is also a more important difference between surety and insurance. Primarily, what the surety company is doing is lending its credit for a fee, much as a bank makes a loan. That's why the surety company checks your financial capacity, business reputation, and volume of work on hand before it will bond you, very much as a bank does in regard to a loan. The surety company does not expect to lose any money on you, and it has a right to recover any losses from you—if it can. In this, it is very unlike an insurance company, which exists to sell you protection against loss.

An insurance company trusts in the statistical "law of large numbers" because in most lines of insurance it has a large number of risks. From past experience, it can predict losses accurately enough to set its premium rates. That's why you don't have to go through a screening process to buy the popular forms of insurance.

But in the surety business there aren't so many risks to cover, and hence no opportunity to develop loss experience. Furthermore, it is often impossible to predict what kinds of trouble may arise, or how much loss they may cause. Therefore each risk becomes a separate problem for approval by the surety company.

The troubles that cause contractor failure to perform contracts—for instance, a sudden rise in price levels, labor problems, or unexpected ground conditions—are impossible to predict. Obviously, contractors do try to allow for such hazards in working out bid prices, but they cannot predict them. Neither can surety companies.

• **Right to recover**—That's why surety companies sometimes have losses, just as banks sometimes make bad loans. But since they have not accepted the principle that they will inevitably have losses, the way a fire insurance company does when it sells policies, they have a right to recover their loss from you. This is not just a technicality. It is estimated that surety companies eventually recover about one-third of their losses in this way. That is one more reason why surety companies emphasize moral character when making investigations of applicants for bonds.

For the contractor, the most important bonds are those that have to do with job contracts. In bidding on a job, he may if requested furnish a bid bond which guarantees that his bid is genuine, that he will enter into a contract if his proposal is accepted, and that he will furnish performance and payment bonds. The performance bond guarantees that the job will be finished as per specifications. The payment bond guarantees that subcontractors and suppliers will be paid, thus removing any danger of liens being filed on the client's property.

Though the usual situation is for the contractor to furnish bond to the client, general contractors sometimes protect themselves against failure of subcontractors by requiring subs to

furnish performance bonds. This practice seems to be growing. It often depends on how well the general contractor knows the subs with whom he does business. He has to figure out for himself whether the additional cost is worth the added protection.

The "blast bond" is perhaps the most typical example of another sort of surety protection often used by construction men—license bonds. Such a bond is posted by anyone who gets a license from local government authorities to do a potentially dangerous job—blasting, for instance. This bond protects the licensing authority from damage suits, if some passer-by gets hurt.

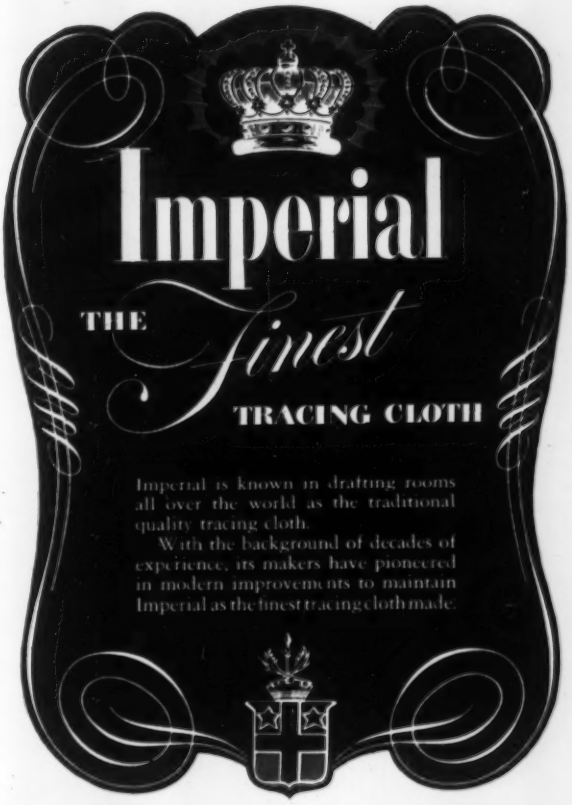
• **Why surety?**—Construction men very often fail to see that contract bonds are of any use in their particular case. In the words of a well-known expert on construction financing, Guy Kiddoo of the First National Bank of Chicago, no contractor is "willing to admit the possibility that he won't successfully and fully complete his contract, and so he feels that furnishing a surety bond serves no good purpose."

The surety companies quite rightly point out that being required to post bond is no reflection on the contractor. It is a reasonable business precaution by the client. If the contractor has the experience, the physical and financial capacity, and the moral reputation to do the job, he'll get his bond. The surety companies, after all, are in business to sell bonds; and they compete with each other.

Furthermore, a bonded job has this big advantage for the client: He is able to budget cash needs for the job on a firm basis after awarding the contract. That's why nearly all public jobs are bonded, and why surety bonds gradually have become more widely used in private work.

• **Advantages**—Surety men point out that bonding has advantages for the contractor who gets the bond as well as for the client. Listen, for instance, to Lawrence Carr, a surety broker who is vice-president of the A. L. Carr Agency in New York City:

"A bond is protection for the contractor as well as for the client. The contractor gets the benefit of the surety company's experience, and of its agents' experience. For instance, a surety agent or broker, through his knowledge of local conditions, is sometimes able to warn a contractor from bidding a job that may run into diffi-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culties unforeseen by bidders. Sometimes a contractor can benefit by specific advice on how to improve cost controls and accounting procedures."

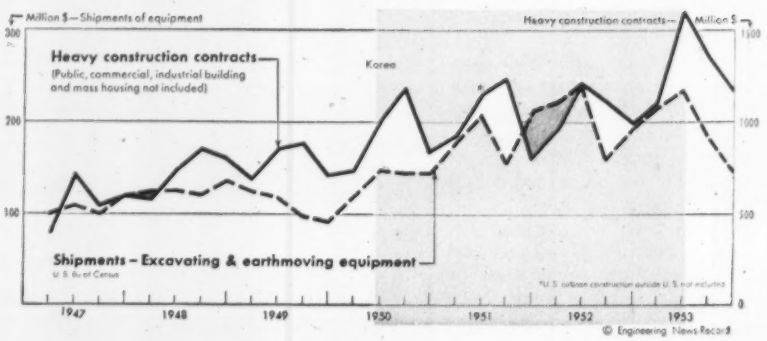
• **Cost**—Of course, surety bonds are not for free. The premium cost on a contractor's performance bond, with its accompanying payment bond, is usually from ½% to 1% of the amount of the contract, depending on the type of construction. (The fee for a bid bond is nominal.) That can mean a lot of money on a big job. Although this is passed on to the client together with other costs of the job, contractors naturally want to keep costs down.

However, surety companies argue that, in addition to the other advantages, a payment bond often can actually cut costs. Since it gives subcontractors and suppliers a guarantee of payment, the contractor may benefit from more favorable prices as well as freer credit terms. The fact that a job is bonded also tends to make subs and suppliers prompter, more interested in the job.

Furthermore, surety companies can prove that they have often been able to minimize contractor losses by fast action in giving extra financial and engineering help when contractors have gotten into trouble. This is only good business, since the surety saves itself money. And it helps keep the contractor in business.

Naturally, the surety company is not obliged to come to the aid of an incompetent contractor. It also has the option of taking over the job and letting someone else finish it. In many cases, it has a third option: It can have the client reoffer the job for bidding and make up to the client any difference between the new winning bid and the amount of the original winning bid.

The role of the surety agent or broker is important, especially from the contractor's point of view. In towns and smaller cities, surety lines are handled by local insurance agents, who usually have little experience with surety and must pass applications further up the line before any final decisions can be made. Brokers and agents in larger cities do more surety business, develop more experience and hence get more authority to act on large bonds. This obviously is useful to contractors, since decisions on whether or not to give bid bonds often must be made within a few hours, between the time when the contractor has finished estimating his bid and the time when bids must be opened.



Equipment shipments drop sharply

Manufacturers' shipments of new equipment declined sharply during the last quarter of 1953, continuing a trend which started at midyear (chart). Total shipments for 1953 were 5% below the record level last year.

The chart shows how the sharp decline in shipments since the record-breaking second quarter of 1953 has closely paralleled the downturn in heavy nonbuilding contracts reported by ENR. This relationship is closer than in past years, because for the first time since the Korean war started there has been no delay in filling equipment orders.

• **1954 outlook**—What about 1954? Heavy nonbuilding contracts so far in this first quarter are running 29% lower than in the final 1953 quarter, and 19% below a year ago. This could mean that, for the first time since 1949, equipment shipments might fail to pick up in the first quarter. There's one tipoff that first quarter sales are slow. Caterpillar Tractor Co. reported that its January sales were 16% below a year ago.

All types of equipment were lower in the last quarter than in the same 1953 period. Tracklaying tractors, however, showed the greatest strength. Shipments were $66.2 million, pushing the 1953 total to $328.7 million, up 17% over the previous high in 1952 (table).

Wheel-type heavy duty tractors continued to decline sharply. For the year, they totaled $43.7 million, down 33% from the 1952 record.

Machinery for mounting on tractors totaled $77 million for the year, about even with the record volume of 1952. Shipments of power cranes and shovels were down 11% for the year to $177.7 million.

There was a moderate decline of 5% in shipments of heavy duty off-highway trucks, wagons, and trailers. They totaled $31.2 million, this group has declined for two years. Road construction and maintenance machinery shipments fell 26% in 1953 to $118.5 million.

Chrysler has spending plans to stay in auto sales race

Chrysler Corp., number three U. S. automaker, is determined to stay in the running with General Motors Corp. and Ford Motor Co. by expanding production and cutting costs.

That's why Chrysler announced last week it has borrowed $250 million from the Prudential Insurance Co. for 3¼% on a 100-year note. Not all of this money will go for capital spend-

'53 equipment shipments dip 5% under '52 record

Type of equipment	1951	1952	1953	% chg '51-52	% chg '52-53
	(millions of dollars)				
Total, all types	**$764.9**	**$825.4**	**$786.6**	**+ 8**	**— 5**
Power cranes and shovels	180.7	199.8	177.7	+11	—11
Road const. and maint. machy.	151.8	159.6	118.5	+ 5	—26
Machy. for mounting on tractors	64.8	77.2	76.9	+19	0
Tracklaying tractors	263.5	280.6	328.7	+ 6	+17
Wheel-type tractors	55.2	65.3	43.7	+18	—33
Trucks, Tr-tract, off-hwy. trailers	36.8	32.8	31.2	—11	— 5
Portable blast hole drills	5.8	6.8	8.0	+17	+18
Other excav. and earth moving equip.	6.2	3.3	1.9	—47	—42

Source: Bureau of Census

ing. At the start of the year, Chrysler paid $35 million for the 12 auto body plants of Briggs Manufacturing Co. It has to pay another $40 million this month for inventories that have accumulated in those plants.

But Chrysler is planning to modernize the Briggs plants. And, like the other auto majors, it is giving increasing attention to "automation." That's the fashionable word for semi-automatic plants which are designed to cut labor costs to the minimum and to speed production. A good deal of this capital spending is scheduled for the Detroit area, where most Chrysler plants are concentrated. However, Chrysler people hint that they might build some assembly plants outside of the Detroit area. They already have one in Indiana and two located in California.

Since World War II, Chrysler has put out $450 million in capital spending. By comparison, General Motors has spent about $2 billion, Ford around $1 billion.

Cost of typical frame house has climbed 150% since 1941

Cost of a typical frame house in Cleveland has jumped from $3,000 in 1913 to $6,000 in 1941 and to $15,300 in 1953, according to figures that have been compiled by Charles A. Braman, local real estate man. He figures that the cost of his typical house is $15,100.

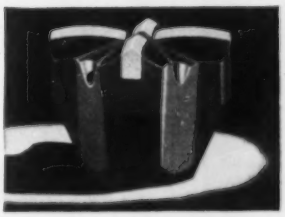
Braman believes his 1941-1953 price ratios, based on the Federal Housing Administration's index for Cleveland, would be valid in any growing U. S. metropolitan area, though he thinks his area is somewhat higher than the U. S. average in dollar valuation.

In terms of dollars, a home buyer in Cleveland spent $255 in 1953 for every $100 he spent in 1941. On a sq-ft basis, the cost is now more than $25, as against $10 in 1941.

New housing bonds sell fast

The latest issue of $119 million of housing bonds, sold by local authorities and guaranteed by the federal government, attracted more bids from investors than ever before. The issue sold at an average interest cost more than ⅜ of 1% below the average cost of the latest previous issue, sold in December.

The reason for this is the increasing ease in money rates, including also the fact that commercial banks are growing more interested in tax-exempt bonds. The regular loan business of banks is declining this year.



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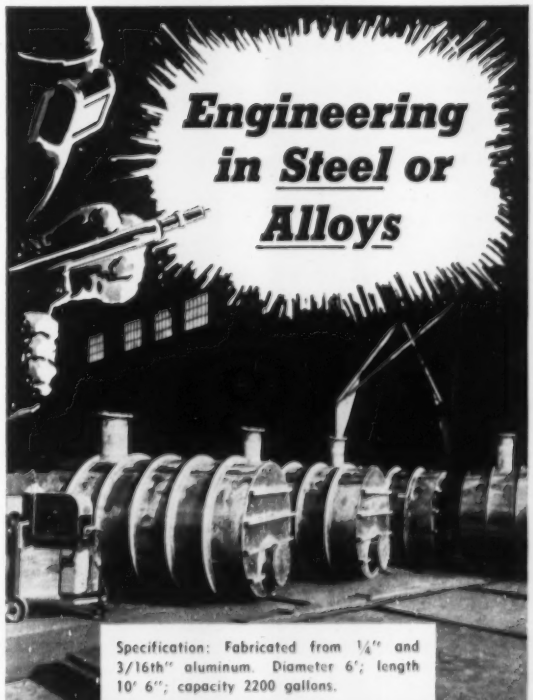

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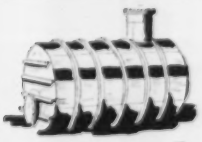

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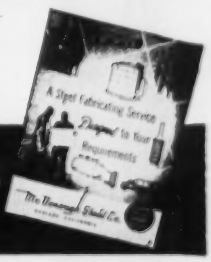

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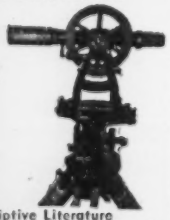

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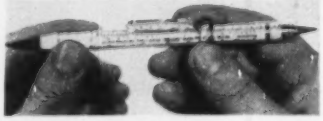
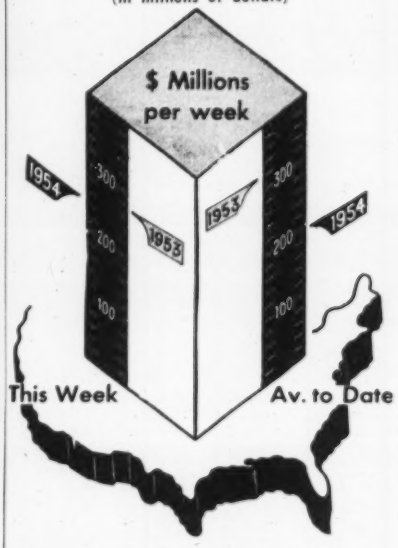


New! 10-in-1 metal and plastic DEVCO instrument has C, D, A, L, S, T, CM & IN scales, detachable ruler-measure, depth gage, optical cursor. Use in the field. Measures, calculates, magnifies, writes in 2 colors. Clips in pocket like regular pencil; 6¼" long. Weighs one ounce. With instructions. 10-day money-back guarantee. $5.00 each, postpaid. Send check or m.o. direct to mfr.: DEVICE DEVELOPMENT CO., Dept. F-2, 226 West 4th St., New York 14.

Activity This Week

As reported to ENR (in millions of dollars)



Amount of contracts let

	This Week	Cumulative 10 wks 1954	1953	% chge
Federal	$10.1	$177.8	$342.1	−48
State and municipal	69.3	731.9	885.2	−17
Total pub.	79.4	909.7	1,227.3	−26
Total priv.	166.1	1,076.9	1,955.9	−45
U. S. total	**$245.5**	**$1,986.6**	**$3,183.2**	**−38**

Contracts by type of work

Waterworks	$5.2	$38.0	$41.9	−9
Sewerage	6.6	57.1	74.0	−23
Bridges	3.7	88.2	132.4	−33
Highways	15.7	222.2	226.7	−2
Earthwork, waterways	1.2	54.8	70.2	−22
Buildings: Public,excl. hsg.	32.5	275.1	337.2	−18
Housg., pub.	4.8	35.0	163.2	−78
Housg., priv.	98.3	563.9	862.2	−34
Commercial	16.1	190.9	173.6	+10
Industrial	46.8	280.4	777.4	−64
Unclassified	14.6	181.0	324.4	−44
Total	**$245.5**	**$1,986.6**	**$3,183.2**	**−38**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

New capital for construction

(millions of dollars)	Mar. 4 1954	Cumulative 9 wks 1954	% chge 1953-54
Corporate securities	$15.7	$537.7	−16
State and municipal:			
Excluding housing	143.0	588.7	+14
Housing	...	21.0	−81
Federal loans	...	19.4	−18
Federal aid	...	...	...
Total non-federal	**$158.6**	**$1,166.8**	**−9**
Federal appro.:			
In U. S.	...	...	...
Outside U. S.	...	...	...
Total new capital	**$158.6**	**$1,166.8**	**−9**

ENR indexes

		Base years = 100 1913	1926	1949
Constr. cost	Mar '54	613.99	295.14	128.71
	Feb '54	614.71*	295.49	128.86
Bldg. cost	Mar '54	437.17	236.32	124.27
	Feb '54	437.55	236.53	124.38
Volume	Feb '54	345	140	100
	Jan '54	338	137	98

OFFICIAL PROPOSALS

Bids: March 18, 1954

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 18th day of MARCH 1954, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No:	Name	Miles	Type	Deposit	Estimated Cost of Work
		District No. 3				
		William Robinson, District Engineer, Weigh Lock Bldg., Syracuse, New York				
Onondaga	R.C. 54-49	Lake Onondaga West Shore Development-Northwest Arterial Connection	4.12	9" Cem. Conc. 2 @ 25' Wide & ASP. Conc. Marg. Rds. = 0.53 Mi. ASPH. Conc. Opt. = 1.48 Mi. Grading & Drainage = 2.11 Mi. 2 Conc. Rig. Frame Brs. 50' each	$143,000 Plans $25	$2,602,000
	S.H. 54-5	Baldwinsville-State Fair, S.H. 8496				
		District No. 9				
		F. W. Donovan, District Engineer, 71 Frederick St., Binghamton, N. Y.				
Broome	T.C. 54-1	City of Binghamton: Brandywine Ave., Ext., F.A.C. 52-3 Brandywine Avenue Extension, F.A.S.H. 52-8	0.11	Traffic Signal System	$1,000 Plans $10	17,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 20 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

Bids: March 25, 1954

Construction of Additions to School

ADVERTISEMENT FOR BIDS
FOR
GENERAL CONSTRUCTION
ELECTRICAL WORK
PLUMBING WORK
HEATING AND VENTILATING WORK
FOR
ADDITIONS TO THE TODD SCHOOL
NEAR PLEASANTVILLE ROAD
BRIARCLIFF MANOR, NEW YORK

Sealed bids for the construction of Additions to the Todd School will be received by the Board of Education, Union Free School District No. 2, Towns of Ossining and Mt. Pleasant, Westchester County, New York, at its office in the High School of the District, Briarcliff Manor, New York, on the 25th day of March, 1954, at 8 o'clock p.m., Eastern Standard Time, at which time and place, they will be publicly opened and read aloud. Separate bids will be received for "General Construction," "Electrical Work," "Plumbing Work," and "Heating and Ventilating Work."

The Instruction to Bidders, Forms of Proposals, Form of Contract, including General Conditions, Specifications, Plans and Form of Bond may be examined at the office of Edward F. O'Dwyer, Architect, 58 East State Street, Westport, Connecticut, or at the office of the Board of Education, High School, Briarcliff Manor, New York, and copies thereof may be obtained on and after March 3rd at either office upon deposit of $10.00 per set. The deposit will be refunded to bidders upon return of the Plans and Documents in good condition within thirty (30) days after the the opening of bids.

The Board of Education reserves the right to waive any informalities in or to reject any or all bids.

Each bidder must deposit with his bid a "Bid Bond" or Certified Check in an amount of not less than five per centum (5%) of the Base Bid in the form and subject to the conditions provided in the Instructions to Bidders.

The successful bidder will be required to furnish a satisfactory performance and payment bond in the form attached to the Contract Documents in the amount of not less than 100 per cent of the total amount of the accepted bid.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under these Contracts.

No bidder may withdraw his bid within 45 days after the date set for the opening thereof.

By order of the Board of Education, Union Free School District No. 2, Towns of Ossining and Mt. Pleasant, Westchester County, New York.

Dated: February 26, 1954.
(signed) Donald Corneille, Clerk

Bids: April 20, 1954

CITY OF
ERIE, PENNSYLVANIA
ERIE SEWER AUTHORITY
SEWAGE WORKS IMPROVEMENTS
ADVERTISEMENT FOR BIDS

The Erie Sewer Authority, Erie, Pennsylvania, will receive sealed Proposals for the construction of Additions to the existing City of Erie Sewage Treatment Plant until 2:00 P.M. Eastern Standard Time, on the 20th day of April, 1954, at the City Council Chambers, Erie, Pennsylvania.

All Proposals received will be publicly opened and read aloud in the Council Chambers at Erie, Pennsylvania, at 2:00 P.M. on April 20, 1954.

The construction contemplated on the additions to the Sewage Treatment Plant designated as Division "A" of the proposed Sewage Works Improvement program, is divided for bidding purposes into five separate sections. The contract document and the contract drawings are each bound in one complete set which covers all work contemplated under Division "A."

The contract documents, including plans and specifications, are on file and available for inspection at the office of the City Engineer of the City of Erie, at Erie, Pennsylvania.

Copies of documents, including plans and specifications, required for review or bidding purposes may be obtained only from the City Engineer by depositing $80.00 for any one or more Sections under Division "A" at the office of the City Engineer for each set of documents so obtained.

The full amount of the deposit for one set of documents and one-half of the deposit for any additional sets of documents will be refunded to each bidder who submits a formal Proposal to the Erie Sewer Authority, and who also returns the plans (and specifications on additional sets) in good condition to the City Engineer within ten (10) days after his bid security has been returned to him.

Equipment manufacturers, sub-contractors, and others who do not submit formal Proposals to the Erie Sewer Authority will be refunded one half (½) the amount of the deposit for all sets of complete documents including plans and specifications returned in good condition to the City Engineer within ten (10) days after the opening of bids. No refund will be made for documents received by the City Engineer after this ten (10) day period.

A certified check(s), cashier's check(s) or bank draft(s) drawn on a solvent bank or banks, payable without condition to the Erie Sewer Authority, Erie, Pennsylvania, or a satisfactory bid bond executed by the bidder and a surety company in an amount not less than ten (10) percent of the bid shall be submitted with each Proposal.

The Erie Sewer Authority proposes to complete financing arrangements for the improvement after construction bids are received. The bid securities of all bidders, except that submitted with the lowest acceptable Proposal on each Section of Division "A" will be returned within ten (10) days after the time of opening bids. The bid security of the lowest acceptable Proposal on each Section may be held by the Erie Sewer Authority until financing is completed and a construction contract executed. This period is not to exceed 30 days after the time of opening bids, except by mutual agreement for a time extension beyond the 30 day period.

The Erie Sewer Authority reserves the right to reject any or all Proposals and to waive any informalities or irregularities in the bids received, or to accept any Proposal on any one Section or a combination of Sections which is deemed most favorable to the Authority, at the time and under conditions stipulated in the Instructions to Bidders.

Each successful bidder will be required to furnish a satisfactory Performance Bond and Labor and Material Bond in the sum of the full amount of his contract.

The Improvements on which Proposals are solicited are divided into five (5) Sections and bidders may submit a Proposal on any one or a combination of Sections as listed in the Proposal Form. The Proposal on each Section shall include the furnishing and installation of all labor, materials, equipment, tools, supplies, etc., for a complete operating installation. The work to be constructed under Division "A" is briefly described as follows:

Division "A" includes the construction and placing into operation of structures, equipment, piping and appurtenances required to enlarge an existing primary type Sewage Treatment Plant now serving the City of Erie. This existing plant has a nominal capacity of 22.5 million gallons per 24 hours. The additions proposed will convert the existing plant to a modified aeration type plant having a nominal capacity of 45.0 million gallons per 24 hours. Division "A" also includes the construction of a small ejector station of a capacity of 100 gallons per minute. Division "A" is divided into five (5) Sections as follows:

Section I General Construction, Major Equipment, and Process Piping
Section II Electrical
Section III Plumbing
Section IV Heating
Section V Ventilation

Wage rates for this work shall be not less than the prescribed scale of wages as established for the Erie, Pennsylvania Labor Market Area by the City of Erie, Pennsylvania and adopted by the Erie Sewer Authority.

Anti Labor Discrimination requirements as stated in the "Erie Community Relations Commission Ordinance" shall be strictly adhered to.

Plans and specifications for this project were prepared by Consoer, Townsend & Associates, Consulting Engineers, 351 East Ohio Street, Chicago 11, Illinois, and 717 Liberty Avenue, Pittsburgh 22, Pennsylvania.

Dated at Erie, Pennsylvania
this 2nd day of March, 1954.

ERIE SEWER AUTHORITY,
ERIE, PENNSYLVANIA
By: Fred A. Gorenflo
City Engineer

OFFICIAL PROPOSALS

Bids: March 16, 1954

Construction of In-Transit and Warehouse Building

The Board of Harbor Commissioners, Marine Terminal, Wilmington, Delaware, invites sealed proposals for the construction of a new In-Transit and Warehouse Building, Wharf, Grading, Water Supply, Fire Protection, Railroads, Paving and Electric Work, on 16 March 1954. Bids will be publically opened and read at the office of the Marine Terminal at 2.00 P.M., E.S.T., on the above date. Bidders may mail their bids to the Board of Harbor Commissioners, P. O. Box 1191, Wilmington, Delaware.

Harris-Dechant Associates, Consulting Engineers, 123 S. Broad Street, Philadelphia 9, Pennsylvania.

Plans, Specifications and proposal forms may be secured from the Board of Harbor Commissioners, Wilmington, Delaware by depositing $30.00 per set, which deposit will be refunded only upon the receipt of a bona fide bid, and return of the plans and specifications in good order within ten (10) days after the opening of bids; otherwise the deposit will be forfeited.

Plans and specifications may be reviewed free of charge at the offices of the Engineers.

Each proposal must be accompanied by a certified check drawn to the order of the Board of Harbor Commissioners, or a Proposal Guaranty Bond in the amount of $25,000.

The Board reserves the right to reject any or all bids, and to accept or reject any part of any bid.

Proposals may be submitted on the separate Proposal Forms provided, but shall not be submitted on bidders letterheads.

BOARD OF HARBOR COMMISSIONERS
WILMINGTON, DELAWARE
JOSEPH S. WILSON,
President

15 February 1954

Bids: March 30, 1954

Contract NYA-470.001

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
EXTENSION OF TAXIWAY C-C

Sealed proposals for the construction of an extension to Taxiway C-C at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M., Tuesday, March 30, 1954, at which time and place said proposals will be opened and read.

The documents may be seen at the office of the Engineer of Materials of the Authority, Room 1112. Three sets of contract documents, or less, will be furnished to any company upon deposit of $30.00 per set (each set consisting of two copies of the contract booklet, one copy of the contract drawings and such other papers as the Authority may furnish). More than three sets of contract documents will be furnished to a company only upon payment of $30.00 per set, which payment is not returnable under any circumstances. For each set of contract documents, not exceeding three, returned in good condition not later than forty days after the opening of proposals, those who have submitted a bid on the contract will receive a full refund of the deposit and those not submitting a bid will receive a refund of one-half of the deposit. Documents must be returned within forty days after the opening of proposals in order to receive any refund. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials, who will furnish the contract documents.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, March 11, 1954

U. S. Government

BIDS FOR CONSTRUCTION OF STEEL MATERIAL BARGES. Memphis District, Corps of Engineers, U.S. Army, P.O. Box 97, Memphis 1, Tenn. Sealed bids will be received at this office until 11:00 a.m., C.S.T., 25 March 1954, and then publicly opened for construction of ten steel material barges. Information on request.

OFFICIAL PROPOSALS

Bids: March 22, 1954

Construction of Pumping Station

NOTICE IS HEREBY GIVEN that pursuant to a resolution of the Town Board of the Town of Tonawanda, Erie County, New York, sealed proposals will be received and considered by said Town Board on the 22nd day of March, 1954, at 8:00 o'clock p.m., Eastern Standard Time, in the Council Room of the Municipal Building, Kenmore, New York, for the construction of a combined raw water and high service pumping station, complete with pumping equipment, inside piping 23KV, primary electric service substation, electric controls and equipment for nine pumping units, and other appurtenant work, in accordance with contract documents therefor, all of which are on file with the Town Clerk at his office in the Municipal Building, Kenmore 17, New York.

Copies of the proposed contract documents, plans, specifications, and instructions to bidders, may also be examined at the office of Nussbaumer, Clarke & Velzy, Consulting Engineers, 327 Franklin Street, Buffalo 2, New York. One copy of said documents and plans may be obtained upon deposit of Fifty Dollars ($50). Any bidder, upon returning said plans and contract documents in good condition, within twenty (20) days following the taking of bids, will be refunded the full amount of his deposit; non-bidders will similarly be refunded only one-half the deposit.

Robert Johnson
Town Clerk
TOWN OF TONAWANDA, NEW YORK

Bids: April 7, 1954

Philadelphia, Penna.
Procurement Department
Water Department

Sealed proposals will be received in Room 313 City Hall Annex, until 1:30 P.M., EST, WEDNESDAY, APRIL 7, 1954, and opened at that time in Room 313 City Hall Annex, Philadelphia, Pennsylvania, for BID No. 2138—CONTRACT No. 601-W.

The work covered by this bid consists of furnishing all labor, materials, equipment and accessories for making all alterations and additions to the existing pumping station; demolition of existing structures; removal and disposal of existing equipment, piping and facilities; constructing complete all additional structures, including alterations; and furnishing and installing auxiliary equipment and appurtenances in connection with the electrification of the present Queen Lane Pumping Station.

Proposal forms, specifications, questionnaires and blueprints may be obtained in Room 1131 City Hall Annex. A deposit of Twenty-five Dollars ($25.00) in cash or certified check is required for each set of blueprints and specifications. This deposit will be refunded upon the return of the specifications and blueprints, unmarked and in undamaged condition within ten (10) days after the bids are received.

No bids will be received unless bidder is qualified by the Procurement Commissioner. The questionnaire form with all questions fully answered must be filed with the Water Commissioner, 1103 City Hall Annex, Philadelphia, Pennsylvania, at least one (1) week prior to the date of opening bids.

Each proposal must be accompanied by security in form and amount as set forth in the proposal.

A. ALBERT CHERASHORE,
Procurement Commissioner.

Bids: March 23, 1954

Contract LT-110.012

THE PORT OF NEW YORK AUTHORITY
LINCOLN TUNNEL
CHAIN LINK FENCE FOR DYER AVENUE RETAINING WALLS

Sealed proposals for the furnishing and installation of chain link fencing for retaining walls at the Dyer Avenue approach to the Lincoln Tunnel will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M., Tuesday, March 23, 1954, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1112, and copies will be furnished upon deposit of $10.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Engineer of Materials who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not so returned within the forty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, March 11, 1954

OFFICIAL PROPOSALS

Bids: April 8, 1954

Construction of Tunnel

COMMONWEALTH OF MASSACHUSETTS
METROPOLITAN DISTRICT
COMMISSION

Sealed proposals will be received at the office of the Metropolitan District Commission, 20 Somerset Street, Boston, Mass. until 1:00 P.M. Eastern Standard Time, Thursday, April 8, 1954, and then publicly opened for Contract 210 for the construction of the Boston Main Drainage Tunnel of the South Metropolitan Sewerage District, from a proposed site for Shaft A, near the Ward Street Pumping Station in Roxbury to Shaft C on Deer Island. The work consists of sinking and lining Shaft A at Ward Street, Shaft B at Columbus Park and excavating and lining about 2½ miles of 10-foot finished inside diameter tunnel between Shafts A and B and 4½ miles of 11½-foot finished diameter between Shafts B and C to serve the South Metropolitan Sewerage District, and other appurtenant work. Shafts A and B will be approximately 315 feet deep. The preliminary lining at both shafts will be 14 feet in diameter, and the final linings will be 10 to 9 feet in diameter, respectively. Each bidder shall deposit security in an amount of not less than $350,000. A bond in at least the full amount of the contract will be required of each successful bidder to secure the faithful performance of the contract, and for the payment of all persons performing labor or furnishing materials in connection therewith. Special attention is called to the requirements as to conditions of employment to be observed and to the minimum rates of wages prescribed by the State Commissioner of Labor and Industries. A schedule of such rates is included in the contract and a copy may be obtained at the office of the Metropolitan District Commission. The information for bidders, and the prescribed forms of proposal, contract, and performance bond, and plans and specifications may be examined at the above address, and copies thereof obtained from Frederick W. Gow, Chief Engineer of the Construction Division, upon the deposit of $15, to be refunded only to bidders or others returning them within ten days after the opening of bids. The site of the work and the existing conditions at Shaft C, on Deer Island may be seen by applying at the office of the Chief Engineer, 20 Somerset Street, Boston, Mass. The Commonwealth reserves the right to waive any informality in, or to reject, any or all proposals. No bidder may withdraw his bid within thirty days after the actual date of the opening thereof. A proposal which includes for any item a bid that is abnormally low or high may be rejected as unbalanced.

CHARLES W. GREENOUGH
Commissioner

February 25, 1954

Engineering News-Record

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Its distribution among the contractors of any one state is in proportion to the number of contractors situated in that state. The Official Proposal Columns of *Engineering News-Record* offer precisely the same efficient service to municipalities, counties, state and federal departments in every section of the United States.

OFFICIAL PROPOSALS

Bids: March 31, 1954

Repairs to Sunrise Reservoir

Sealed proposals will be received for furnishing materials, labor, equipment and services for making repairs and improvements at the Sunrise Reservoir, Portsmouth, Ohio, until 12:00 o'clock noon, Eastern Standard Time, Wednesday, March 31, 1954.

This work, known as "Repairs to Sunrise Reservoir", includes grouting under existing floor, placing new floor slab inside reservoir, installing reinforced concrete cribbing, placing embankment, and other miscellaneous items.

Proposals shall be addressed to the City Manager of the City of Portsmouth, Ohio, sealed and endorsed "Proposals for Repairs to Sunrise Reservoir", and mailed or delivered to the City Manager.

Each proposal shall be accompanied by a certified check on some solvent bank, drawn payable to the City of Portsmouth, Ohio, in an amount equal to ten per cent (10%) of the price bid, such check to be forfeited to the City of Portsmouth, Ohio, as liquidated damages in case of failure on the part of the successful bidder to execute a contract and furnish satisfactory surety bond within ten (10) days after the acceptance of the proposal. In lieu of a certified check bidders may furnish a bid bond satisfactory to the City.

The check of the successful bidder will be returned if the contract is executed and the necessary bond furnished, and to the unsuccessful bidders after award is made and contract entered into.

The City Manager reserves the right to accept any bid or to reject any or all bids should he deem it to be for the best interests of the City of Portsmouth, Ohio.

Plans, specifications, form of proposal and contract are on file and available for inspection at the office of the City Manager and at the Engineer's office. Copies of the documents required for review and bidding purposes may be obtained only from the Engineers, Alfred LeFeber & Associates, Consulting Engineers, 2933 Woodburn Avenue, Cincinnati 6, Ohio, upon deposit of $10.00; $5.00 of which will be refunded upon the return of plans and specifications in good condition within thirty (30) days from the taking of bids.

The City reserves the right to hold all bids for thirty (30) days before final acceptance thereof.

CITY OF PORTSMOUTH, OHIO
by: Chas. S. Stevenson
Acting City Manager

Feb. 24 & March 3, 1954

Bids: March 26, 1954

Contracts No. 210, No. 210A and No. 210B

MAINE TURNPIKE AUTHORITY
MAINE TURNPIKE
Section 2—Portland to Augusta
(Augusta Extension)

Sealed Proposals will be received by the Maine Turnpike Authority for:
GRADING AND DRAINAGE
at the offices of the Authority, 17 Bishop Street, Portland, Maine until 10:00 A. M., Eastern Standard Time, on March 26, 1954, at which time and place the Proposals will be publicly opened and read.

The work will be let either (a) under a single contract, Contract 210, which extends from Maxwell School Road in the town of Webster near Mile 87 to the Cobbosseecontee River, in the town of Litchfield near Mile 96, or (b) under two separate contracts, Contract No. 210A which extends from Maxwell School Road in the town of Webster near Mile 87 to Litchfield Plains Road in the town of Litchfield near Mile 92, and Contract No. 210B which extends from Litchfield Plains Road in the town of Litchfield near Mile 92 to the Cobbosseecontee River in the town of Litchfield near Mile 96.

The principal items of work for Contracts No. 210A, 210B and 210 include:

	Contract No. 210A	Contract No. 210B	Contract No. 210
Clearing, Acres	80	64	144
Excavation-Earth, Cubic Yards	430,000	350,000	780,000
Excavation-Rock, Cubic Yards	72,000	68,000	140,000
Borrow, Cubic Yards	940,000	310,000	1,250,000
Pipe, Linear Feet	14,301	11,155	25,456
Inlets, Each	52	46	98
Concrete, Cubic Yards	91	416	507

Plans and contract documents may be examined by prospective bidders during regular office hours at the offices of the Authority and at the offices of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, N. Y. The plans and contract documents and sets of cross-sections for each Contract may obtained from the Authority, 17 Bishop Street, Portland, Maine, upon payment of the following amounts for each set.

	Plans and Contract Documents	Cross-Sections
Contract No. 210	$35.00	$50.00
Contract 210A	$20.00	$30.00
Contract 210B	$20.00	$30.00

The contract documents and sets of cross-sections need not be returned, and payments will not be refunded. Checks shall be made payable to Howard, Needles, Tammen & Bergendoff.

Proposals must be accompanied by a certified or cashier's check payable to the Maine Turnpike Authority in an amount not less than five per cent (5%) of the Total Amount in the Proposal but not less than $500.00 nor more than $200,000.00.

If a bidder submits a Proposal for Contract 210, as well as a Proposal for Contract No. 210A and/or Contract No. 210B, one check based on the Total Amount in the Proposal for Contract 210 will be sufficient.

Proposals must be made upon the Proposal forms furnished separately by the Authority with the contract documents and must be enclosed in the sealed special addressed envelopes provided therefor bearing the name and address of the bidder and the number of the Contract on the outside.

Before the award of the Contract, any bidder may be required to show that he has the necessary facilities, experience, ability and financial resources to perform the work within the time required and to the satisfaction of the Authority.

The Bidder, to whom a Contract is awarded, will be required to furnish a Surety Corporation Bond, satisfactory to the Authority, on the standard Contract Bond form of the Authority, for a sum not less than the Total Amount of the Proposal.

The Authority reserves the unqualified right to reject all Proposals or to accept that Proposal which in its sole judgment will under all circumstances serve its best interests. The Contract will be awarded or Proposals rejected within thirty days after the date of opening Proposals, except that in the event of default by a successful bidder the Authority reserves the right to accept the Proposal of any other bidder within twenty days after such default.

MAINE TURNPIKE AUTHORITY
Paul C. Thurston, Vice-Chairman

Portland, Maine
March 4, 1954

Bids: March 25, 1954

Contracts No. 209, No. 209A and No. 209B

MAINE TURNPIKE AUTHORITY
MAINE TURNPIKE
Section 2—Portland to Augusta
(Augusta Extension)

Sealed Proposals will be received by the Maine Turnpike Authority for:
GRADING AND DRAINAGE
at the offices of the Authority, 17 Bishop Street, Portland, Maine until 10:00 A. M., Eastern Standard Time, on March 25, 1954, at which time and place the Proposals will be publicly opened and read.

The work will be let either (a) under a single contract, Contract No. 209, which extends from the Androscoggin River in the City of Lewiston near Mile 76 to Maxwell School Road in the Town of Webster near Mile 87, or (b) under two separate contracts, Contract No. 209A which extends from the Androscoggin River in the City of Lewiston near Mile 76 to the Sabattus River in the Town of Webster near Mile 82, and Contract No. 209B which extends from the Sabattus River in the Town of Webster near Mile 82 to Maxwell School Road in the Town of Webster near Mile 87.

The principal items of work for Contracts No. 209A, 209B and 209 will include:

	Contract No. 209A	Contract No. 209B	Contract No. 209
Clearing, Acres	70	90	160
Excavation-Earth, Cubic Yards	765,000	695,000	1,460,000
Excavation-Rock, Cubic Yards	35,000	65,000	100,000
Borrow, Cubic Yards	870,000	570,000	1,440,000
Pipe, Linear Feet	13,554	10,305	23,859
Inlets, Each	63	51	114
Concrete, Cubic Yards	2,260	770	3,030

Plans and contract documents may be examined by prospective bidders during regular office hours at the offices of the Authority and at the offices of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, N. Y. The plans and contract documents and sets of cross-sections for each Contract may obtained from the Authority, 17 Bishop Street, Portland, Maine, upon payment of the following amounts for each set.

	Plans and Contract Documents	Cross-Sections
Contract No. 209	$35.00	$50.00
Contract No. 209A	$20.00	$30.00
Contract No. 209B	$20.00	$30.00

The contract documents and sets of cross-sections need not be returned, and payments will not be refunded. Checks shall be made payable to Howard, Needles, Tammen & Bergendoff.

Proposals must be accompanied by a certified or cashier's check payable to the Maine Turnpike Authority in an amount not less than five per cent (5%) of the Total Amount in the Proposal but not less than $500.00 nor more than $200,000.00.

If a bidder submits a Proposal for Contract 209, as well as a Proposal for Contract No. 209A and/or Contract 209B, one check based on the Total Amount in the Proposal for Contract No. 209 will be sufficient.

Proposals must be made upon the Proposal forms furnished separately by the Authority with the contract documents and must be enclosed in the sealed special addressed envelopes provided therefor bearing the name and address of the bidder and the number of the Contract on the outside.

Before the award of the Contract, any bidder may be required to show that he has the necessary facilities, experience, ability and financial resources to perform the work within the time required and to the satisfaction of the Authority.

The Bidder, to whom a Contract is awarded, will be required to furnish a Surety Corporation Bond, satisfactory to the Authority, on the standard Contract Bond form of the Authority, for a sum not less than the Total Amount of the Proposal.

The Authority reserves the unqualified right to reject all Proposals or to accept that Proposal which in its sole judgment will under all circumstances serve its best interests. The Contract will be awarded or Proposals rejected within thirty days after the date of opening Proposals, except that in the event of default by a successful bidder the Authority reserves the right to accept the Proposal of any other bidder within twenty days after such default.

MAINE TURNPIKE AUTHORITY
Paul C. Thurston, Vice-Chairman

March 4, 1954

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-4130) will be received at Denver, Colorado, until April 8, 1954, for furnishing seven 80-foot by 6-foot drum gates for Missouri Diversion Dam, Missouri River Basin Project, Montana. Delivery is desired within 270 to 420 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-4131) will be received at Denver, Colorado, until March 25, 1954, for furnishing trashracks for outlet and power intake structures at Palisades Dam, Palisades Project, Idaho. Delivery is desired within 180 and 240 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado.
W. A. Dexheimer, Commissioner.

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(Classified Advertising)

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for general building contractor. Excellent opportunity and permanent position with young, expanding company. Must be capable of estimating and analyzing subbids received from mechanical and electrical subcontractors and supervise and expedite work after subcontract awarded. Write full particulars, including education, experience, personal details, and salary requirements to:

BLOUNT BROTHERS CONSTRUCTION COMPANY

Post Office Box 1144

Montgomery, Alabama

ENGINEER

Experienced in design of clamshell and other types of buckets. All employee benefits. Position permanent. Give education and complete experience in first letter.

ERIE STRAYER COMPANY

Box 1031

ERIE, PENNA.

ASSISTANT CITY ENGINEER

WANTED

for Manitowoc, Wisconsin. Must be registered or eligible for registration in Wisconsin.

Send full particulars regarding qualifications and salary expected in first letter to:

EARL F. WALTER

City Engineer

City Hall

MANITOWOC, WISCONSIN

OPPORTUNITY

For an energetic engineer with sales personality. 25 to 35 years of age, for sales work with company operating on nationwide basis furnishing Concrete Form Engineering and Rental Service. General construction experience and some Engineering college training essential. Give full details in first letter to

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4301 N.E. 14th St. Des Moines 13, Iowa

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

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SUPERINTENDENT LARGE bridge project in South. Prefer graduate 35-45 with heavy experience, cofferdams, piledriving, floating equipment, structural steel erection, concrete, etc. Progressive firm adding to expanding supervisory staff. Submit complete details including age, education, experience, references, availability, salary expected. P-1750, Engineering News-Record.

WANTED: EXECUTIVE Concrete Form Engineer, thoroughly experienced in competitive concrete construction, management, bidding, costs and design. Applicant shall be a specialist with a successful cost experience record. This is a permanent position with desirable working conditions. Apply to: Geo. Sheaf & Co., 449 Neilston St., Columbus 3, Ohio.

LARGE, WELL established Contractor in the Middle West, has a permanent position open for a Building Construction Supt. to construct: Schools, Churches, Hospitals, & Office Bldgs. We do not want an office executive for this job, but rather a practical man who has actually built things and has the know how acquired from experience. State work history, age, and approximate salary requirements. P-1913, Engineering News-Record.

SEWERAGE DEPARTMENT Superintendent—Take charge of primary treatment plant and maintenance of sewerage system. Experience required. Salary $400 per month. Submit age, experience and references. Write City Engineer, South Milwaukee, Wisconsin.

GRAVEL PLANT Superintendent for portable and stationary plant in Michigan and Indiana. State exact experience and wages. P-1810, Engineering News-Record.

STRUCTURAL STEEL Detail Draftsmen and Checkers. All types of Structures. Interested in only top quality men with five or more years highly successful experience. Send complete written information for investigational purposes. Bristol Steel and Iron Works, Inc., Bristol, Virginia-Tennessee.

BUILDING ESTIMATOR — Graduate Engineer preferred. Must be thoroughly experienced in bidding and constructing of Sewer Disposal Plants. Well established Construction Company, bidding throughout Southeast. Wright Contracting Company, P. O. Box 1586, Columbus, Georgia.

PARTY CHIEF or Transitman—Municipal survey experience required, boundary surveys, subdivision, roads and sewers. Send personal experience summary. Location northern N. J. P-1932, Engineering News-Record.

ENGINEERS HAVING extensive highway department experience and ability to train men in location, layout, design, preparation contract drawings, and construction of highways for Near East project. Salary attractive. Living conditions good. Submit experience and references. P-1950, Engineering News-Record.

ESTIMATOR-ENGINEER: Excellent opportunity with general contractor in New York area for energetic chief estimator with primary experience in heavy construction, public works projects. Give full details training and experience. P-2004, Engineering News-Record.

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SALES ENGINEER—Pittsburgh, Pennsylvania and Albany, New York territories open with established national concern selling prefabricated metal products to engineering and construction markets. Positions offered are permanent and present excellent future with aggressive, progressive and expanding organization. Engineering degree desirable. Previous sales experience unnecessary. Age 24 to 30. Car furnished. Complete training program. Salary and bonus. RW-1420, Engineering News-Record.

SALES AGENCY offered to man now contacting architects and industrials for product specifications. This proven item in the construction line now successfully handled as sideline by such persons. $250,000 yearly potential in industrial areas. Straight 5% commission with complete protection. Liberal manufacturer aid via published advertising and direct mail. Many choice territories still available. RW-8736, Engineering News-Record.

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OVERSEAS PROJECTS Guide to most active constructor's engineers, oil co's., gov't, & UN groups hiring for foreign projects. Send $1. Cove-McKane Int., GPO Box 126E, NY 1, NY.

POSITIONS WANTED

GENERAL SUPERINTENDENT, 25 years diversified experience including industrial plant construction, heavy excavation soil and rock, docks and piers, concrete structures, highways, bridges, dams, sewer systems and treatment plants, water systems and pumping stations. Capable of assuming full responsibility on large job. Good background, know men and equipment. Good references, available any location immediately. PW-1764, Engineering News-Record.

PROJECT MANAGER, construction superintendent or engineer (graduate), 28 years experience heavy construction, industrial buildings, machinery. PW-1790, Engineering News-Record.

CONSTRUCTION EXECUTIVE, with long experience on buildings, heavy construction, docks, etc., seeks new connection in General Contractor's office or as Project Manager on large job. Thorough organizer, with sound knowledge of all details of contracting, able to assume full responsibility. Inquiries solicited from contractors requiring high grade man, New York or vicinity preferred. PW-1754, Engineering News-Record.

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BUILDING ESTIMATOR, 20 years experience all type structures, pricing, sub-bids expediting etc.—Graduate registered engineer. PW-1910, Engineering News-Record.

CIVIL ENGINEER graduate. Age 33. 8 years experience, 2¼ years in field, 5¼ years in office. Experienced in field supervision, design, drafting, estimating, costs, quantity take-off; also experience in reinforced and prestressed concrete. Prefer N. Y. area. Available March 15th. PW-1899, Engineering News-Record.

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POSITION WANTED: Field Office Manager, heavy construction. PW-2002, Engineering News-Record.

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SOILS ENGINEER, age 36, Registered P. E. Masters Degree, 11 years experience including supervision of field and laboratory work. Analysis of data for foundation design, compaction control, embankment stability, etc. married. PW-1982, Engineering News-Record.

MECHANICAL ERECTOR, fifteen years experience Industrial construction specializing conveying, heavy material and operating new plants. Degree papers etc. PW-1939, Engineering News-Record.

CONSTRUCTION MANAGER, Engineer, 25 years experience all types building, industrial and heavy construction. Box PW-1976, Engineering News-Record.

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CONSTRUCTION EXECUTIVE — Age 41, B.S.C.E., Presently employed, Past 12 years as Project Manager on large heavy industrial projects, also 5 years as Engineer on Surveys, Design, etc. on Heavy Construction. Locating family of most importance. Prefer west. Strong on labor relations. PW-1965, Engineering News-Record.

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CIVIL ENGINEER 20 years experience Highway, R.R., Bridges, Power Plants Buildings, design, construction. Resume and references upon request. Available immediately. PW-1938, Engineering News-Record.

CIVIL ENGINEER: B.S.C.E., Reg. 31, single, 7 years experience; 3½ surveying and construction supervision, 3½ structural design. Desires position as engineer or superintendent for contractor on heavy construction in West. PW-1934, Engineering News-Record.

CIVIL ENGINEER, 28, graduate 1950 in Denmark. Experience in heavy construction supervising, surveying, reinforced concrete designs, and general engineering. 2½ years in Canada. Foreign work considered. Five languages spoken. References. PW-1935, Engineering News-Record.

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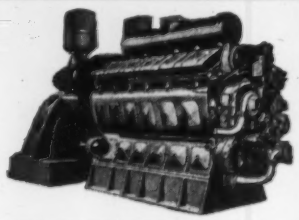

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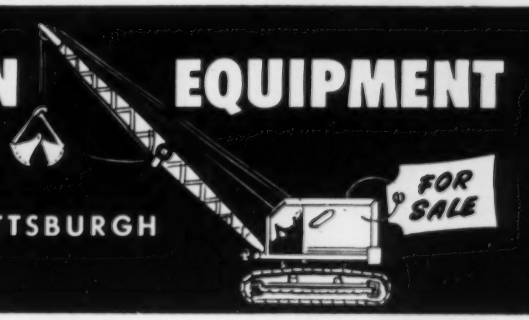

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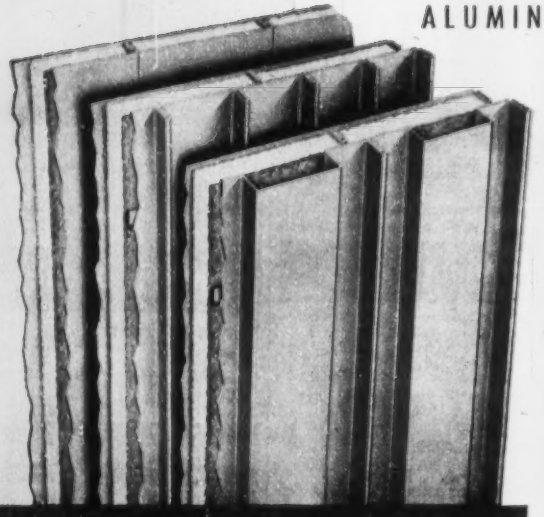

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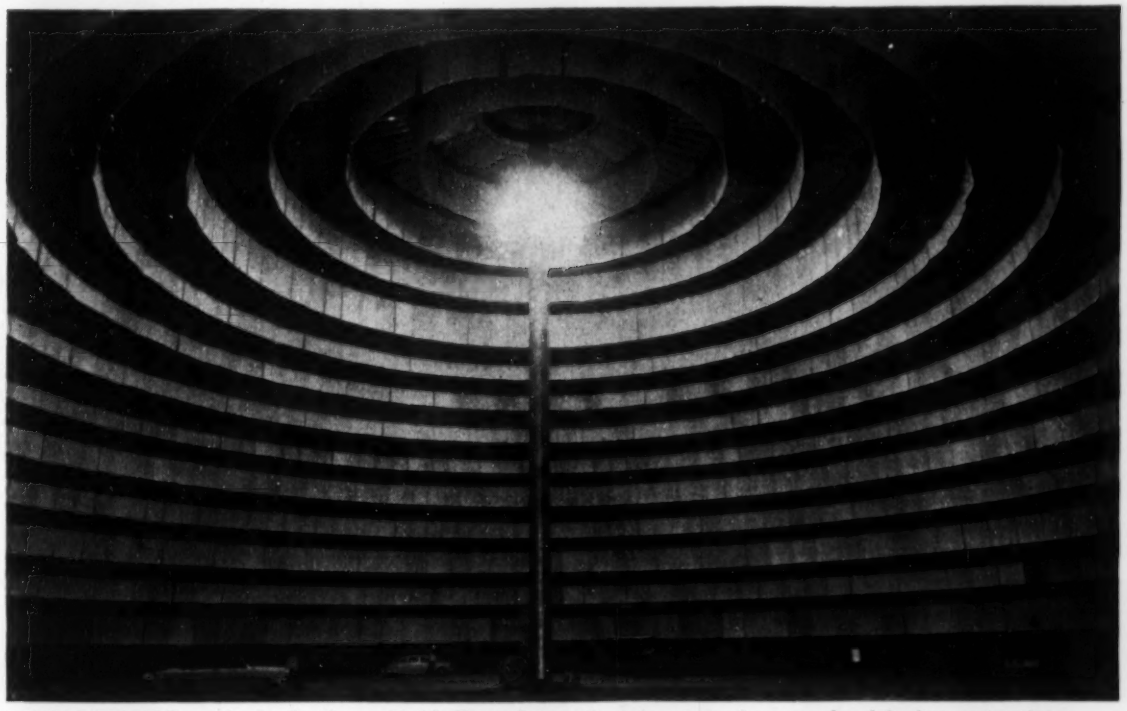


DOME INTERIOR may be fitted with acoustical baffles as shown. Central mast may be removed or left after construction.

"Packaged" aluminum igloo costs $4 per sq ft

Rising 85 ft above the Texas plain at Longview is the new "semispherical" building created by R. G. LeTourneau, Inc. The structure is 300 ft in dia at the base and offers 70,686 sq ft of unobstructed floor area at a cost of less than $4 per sq ft (ENR Dec. 17, 1953, p. 26).

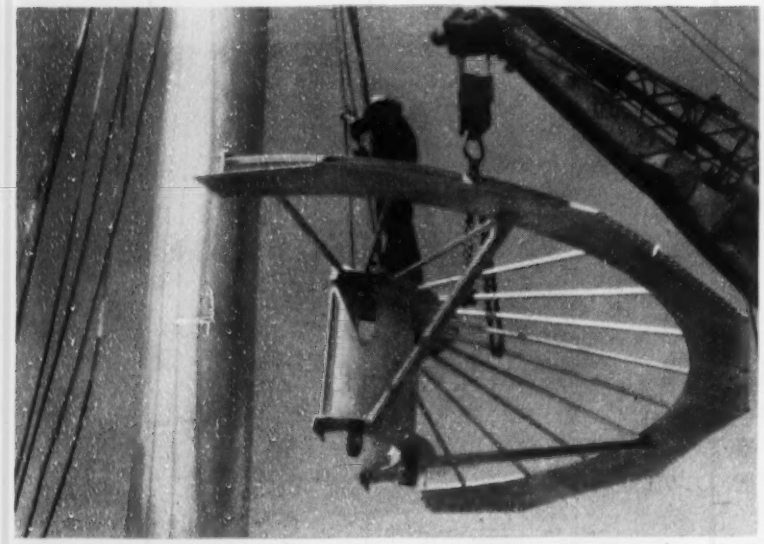
Now that component parts are in production, similar buildings can be erected anywhere by shipping the prepared metal parts to the site. These new structures are said to provide weather-tight floor space and cubic capacity at far less cost than the usual method of construction, and they can be erected by semi-skilled labor.

• **Top down—but ground up**—Construction of the semisphere is a case of building from the top down, but the building work is all done on the ground. A central mast 94 ft high is erected and may be removed or left in after construction is complete.

A sliding steel collar, called the peak structure, is fastened to the center pole at a height convenient for construction at ground level. As successive rings of aluminum sheeting—fifteen in all—are bolted into place, the collar is raised by winch. Jackstands steady the bot-

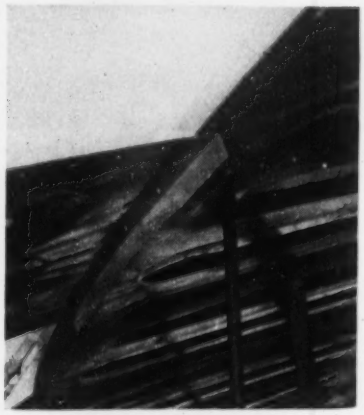
(*Continued on page 102*)

COMPLETED DOME is segment of sphere with an actual radius of 173.2 ft. At ground level the building is 300 ft in dia.



ONE HALF OF PEAK STRUCTURE is guided into place. Completed collar will be winched upward as concentric rings of aluminum sheeting are bolted on.

AERIAL VIEW shows partially completed building. Note the projecting central mast.



ALUMINUM sheets are delivered formed and flanged; bolted into place in rings.

tom edge of the partially-constructed dome during the attaching of each new ring of sheets.

When the last ring is bolted on, the peak structure is 85 ft up the center pole. The lower edge of the completed building is then lowered and secured to a foundation ring.

The construction technique used is similar to that employed in erecting the Ford Rotunda at Dearborn, Mich. There, however, a translucent plastic covering was supported by three-dimensional aluminum trusses (ENR May 28, 1953, p. 31).

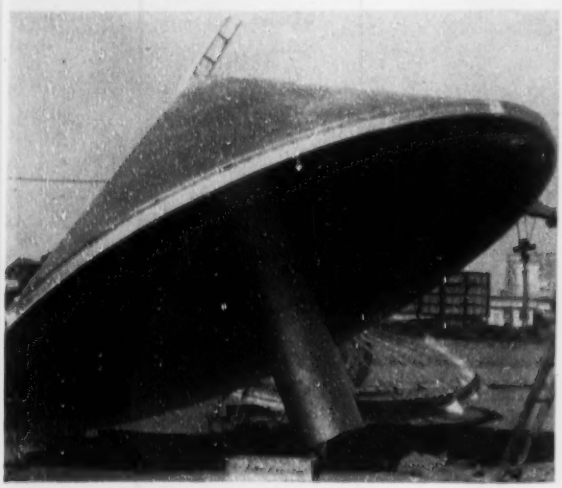
• **Delivered in sections**—The semi-sphere, when delivered to the buyer, consists of the aluminum sheets—curved, embossed, flanged and drilled—and all other necessary aluminum and steel parts produced to design specifications of the manufacturer. A crew of LeTourneau men supervises erection with the assistance of locally hired labor. Approximately 3,000 manhours is estimated for actual assembly.

Finishing details and utilities may be varied according to the building's use. And, within structural limitations, the size and number of entrances and exits can be varied.

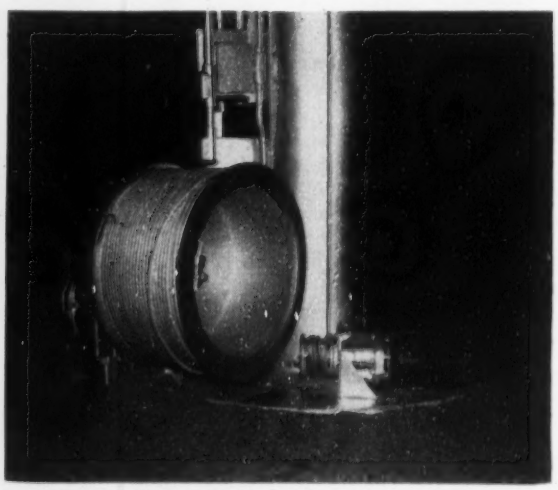
Ventilation of the building is effected by a 255-sq ft opening through the peak around the center pole. This opening is sheltered and controlled by a cone-shaped aluminum hood.

The LeTourneau buildings are being considered for many functions, including auditoriums—it seats 12,000 people—manufacturing and assembly line operations, warehouses, freight handling centers, automotive and heavy equipment display and aircraft hangars. R. G. LeTourneau, Inc., Longview, Tex.

(Continued on page 104)



ALUMINUM HOOD serves to control the 255-sq ft ventilating opening in the peak structure of the dome.



LARGE WINCH raises sliding collar as work progresses. The small winch at right raises and lowers the aluminum cone.

MUELLER®

TAPPING SLEEVES AND VALVES

are your

STRONGEST

branch main connections!

Any movement of a branch main creates high stresses at the branch main connection. Mueller tapping connections are specifically designed with heavy ribs to actually strengthen the main. Connections may be made quickly, under pressure, without loss of water or interruption of flow.

The heavy, corrosion-resistant bolts have self-holding heads and are closely and evenly spaced in perfect alignment along the side flanges of the sleeve for maximum rigidity. The wide, thick side flanges are grooved for positive retention of the lead gaskets to assure a lifetime watertight joint.

A simple flanged connection between the tapping sleeve and tapping valve assures positive alignment for accurate drilling and ease of installation.

Mueller Mechanical Joint Sleeves can be adapted to fit all classes of cast iron pipe by changing the end gaskets. The raised cast ring in the calked joint sleeves centers the ring and keeps the use of expensive lead to a minimum.

Mueller Tapping Valves have oversize seat openings to allow the use of full-size shell cutters.

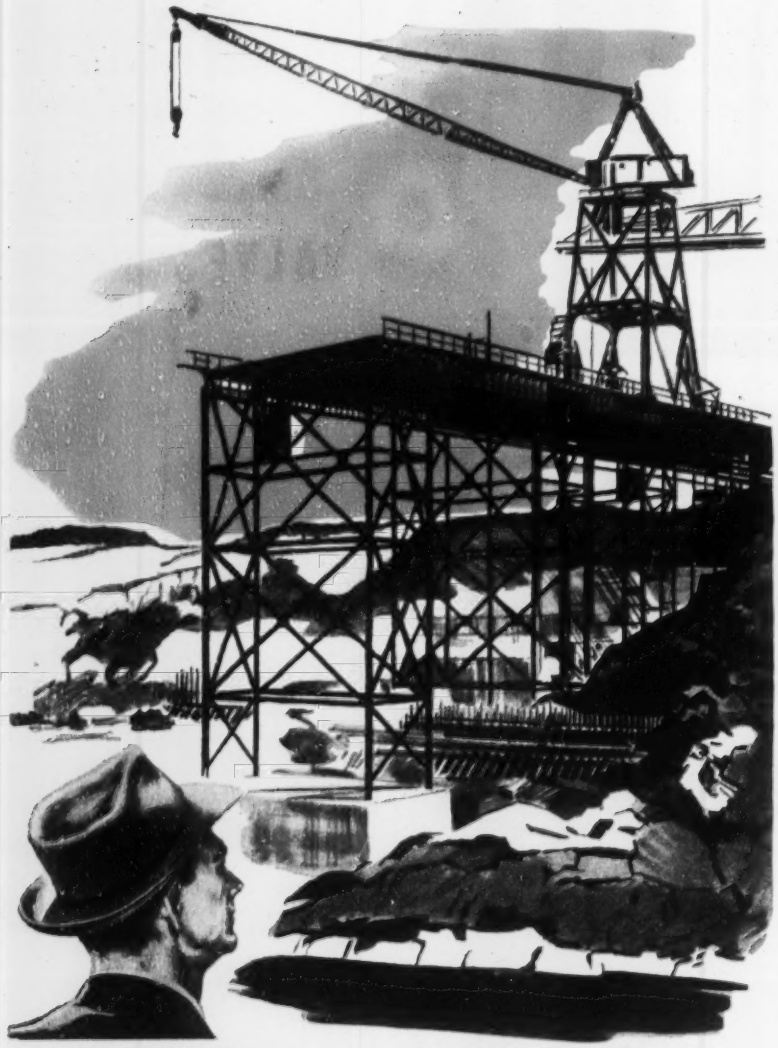
Tapping valves can be furnished with either "O" ring packing or conventional packing and mechanical joint or hub end outlet.

Consult your Mueller Water Works Catalog W-96 or see your Mueller representative for full details.

MUELLER CO.

Dependable Since 1857

MAIN OFFICE & FACTORY DECATUR, ILLINOIS



Building a Reputation

In construction, perhaps more than in other fields, a man is known by his accomplishments. Let a contractor do an outstanding job and the word gets around — his reputation grows.

That's true of bonding companies, too. The reputation that the Ætna Casualty and Surety Company enjoys with contractors everywhere is the result of outstanding service to the construction industry.

Wherever you are, whatever the size of your project, Ætna is in a position to render you prompt, efficient, helpful service.

The next time *you* need a bond, why not join the many hundreds of leading contractors who bond with Ætna—always.

No job too big--no job too small

ÆTNA CASUALTY AND SURETY COMPANY

AFFILIATED COMPANIES: ÆTNA LIFE INSURANCE COMPANY
AUTOMOBILE INSURANCE COMPANY • STANDARD FIRE INSURANCE COMPANY
HARTFORD 15, CONNECTICUT

NEW PRODUCTS

British road danger lamp set for U. S. distribution

Having made somewhat of a reputation for themselves in England, Chalwyn road danger lamps are now being prepared for the American market. The lamps are totally enclosed and therefore are windproof and rainproof. Similar applications make them competitive with the open flame bomb-type flare. Compared with the open flame types, the cost of the British lamps is high—$81 per doz f.o.b. Chicago—but operation is safe and more economical.

Designed for rough use, the lamps are constructed of 22-gage steel and fitted with three ruby stepped bull's-eye lenses. The lamps are also said to be economical—one filling of ⅝ pt lasting 45 hrs.

The units measure 19 in. high to the top of the rigid loop handle, while the body of the lamp is 12 in. high and 5¼ in. square. Weight is approximately 5 lb. W. W. Lee & Son, 20 East Jackson Blvd., Chicago 4, Ill.

Tandem roller gets extra wheels for transportability

A set of hydraulically-retractable rubber-tired transport wheels have been added to Galion variable weight (4-6 tons) tandem rollers. When these wheels are lowered to traveling position, the roller may be towed safely by truck.

A built in hydraulic jack in the truck hitch raises the compression roll and the retractable transport wheels raise the steering roll. Both hydraulic operations are powered by an engine-driven pump. The Galion Iron Works & Mfg. Co., Galion, Ohio.

Opalescent finishes have high reflective qualities

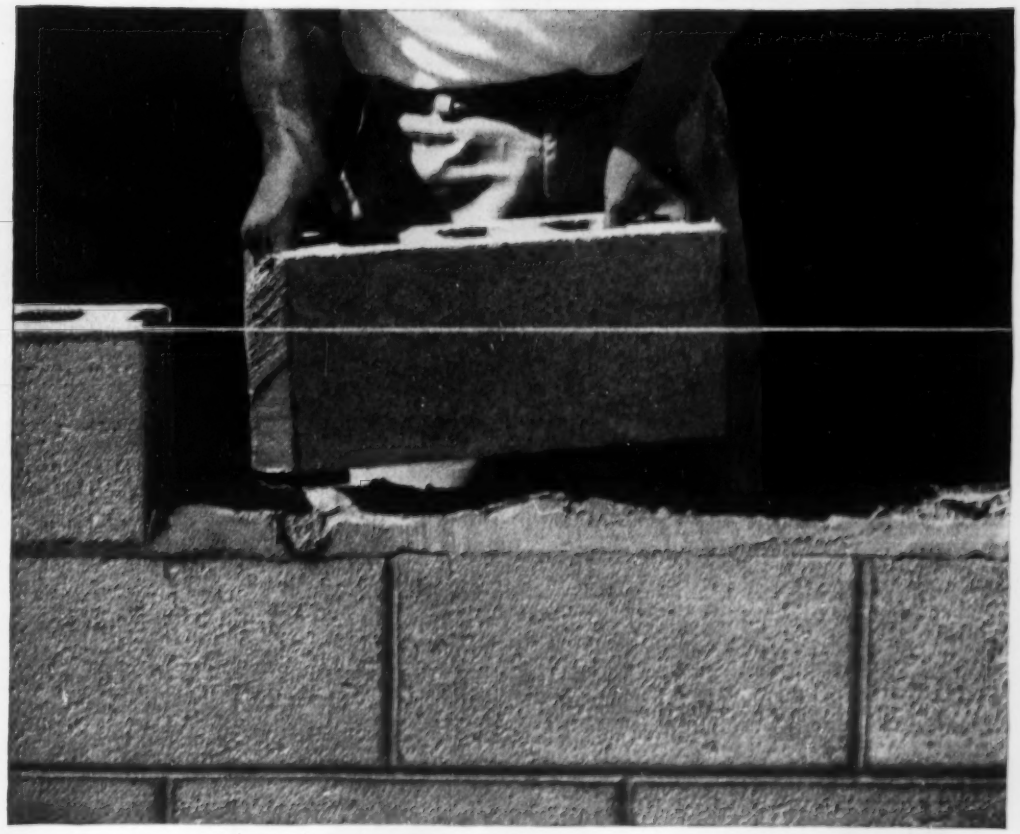
A new paint product, called Opal-Glo, contains aluminum particles that subtly alter the appearance of flat wall paints. By use of the metal's optical properties, the new paint achieves unusual depths and tones of color without having the metallic sheen expected of aluminum finishes.

Properties of the wall paint show promise in particular for industrial applications. Among these claimed properties are a 50 per cent reflectivity of light even with the deeper colors, good durability, high coverage and easy cleaning.

Seven colors are available: gray, rose, aqua, chartreuse, blue, green and brown. Sherwin-Williams Co., 100 Park Ave., New York, N. Y.

BRIXMENT

Better Mortar for Blocks



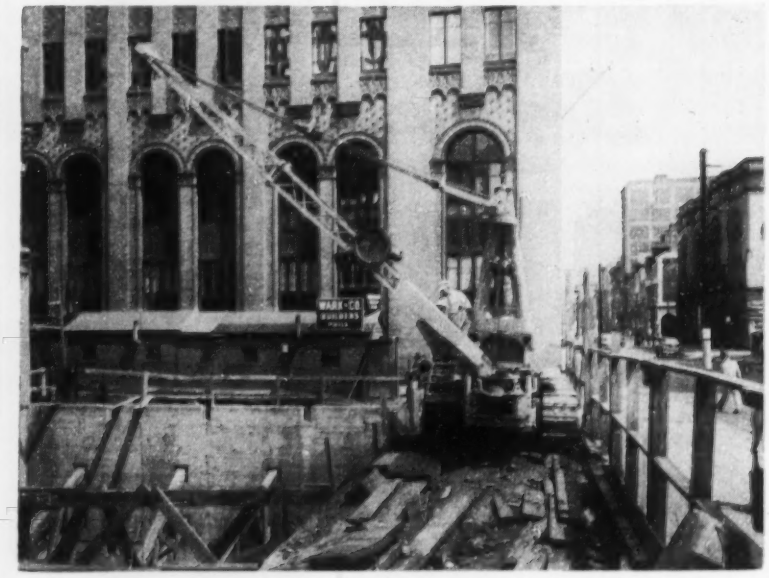
BETTER PLASTICITY

To build the best possible concrete-block walls, the bricklayer must use plastic mortar. The mortar must be plastic enough to stick to the long head joint. It must not drop off when the mortared edges of the block are swung to a vertical position and lowered into place. It must be plastic enough to enable the bricklayer to quickly and accurately tap the block down to the line.

Brixment mortar provides this necessary plasticity. Moreover, it stays soft and plastic long enough to let the bricklayer level, plumb and straighten the unit and adjust it to its final position in the wall before the mortar stiffens.

Design for excavating

A 13-min sound-color film produced by the Hyster Co., 2902 N.E. Clackamos St., Portland 8, Ore., and available from that office or at any Caterpillar-Hyster dealer's. The film deals with the various features of the Hystaway excavator-crane—a tractor attachment.



Take a new or used D8 or D7 Cat, add a Hystaway and you've got a pretty versatile combination—at least that's what the Hyster Co. believes. And to show what they mean by versatile they put the combination through its paces in "Design for Excavating".

With scenes taken on various jobs, the film brings out the advantages of having a ½-yd excavator mounted on an unrestricted, crawler-type tractor. These include maneuverability over terrain unsuited for operation of conventional rigs, the absence of tailswing for work in close quarters, and having a bulldozer as an integral part of the excavating unit.

At the same time, "Design for Excavating" brings out the quick convertibility of the unit by showing it being used as a shovel, backhoe, dragline, clamshell, crane and piledriver.

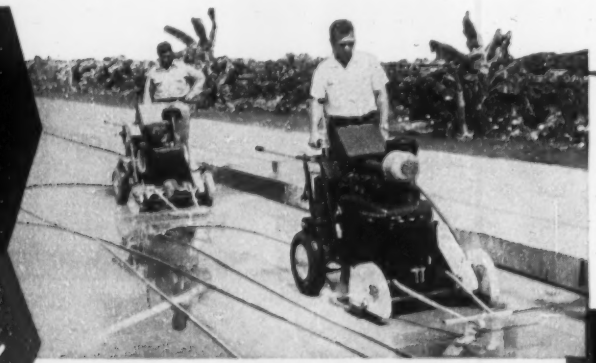
Further, it is pointed out that the tractor's engine is used to power the front end attachments, and therefore the Hystaway can apply nearly two to three times the horsepower as compared with standard excavators of the same capacity.

FELKER DI-MET MODEL 252

CUTS MORE FEET PER DAY!

LENGTHENS BLADE LIFE!

LOWER COST-PER-CUT!



MAKES MORE FOOTAGE PER DAY. Model 252 is SELF-PROPELLED! Cuts faster, requires no tiresome pushing on long straight-a-way-cuts! Eliminates frequent rest periods and loss of footage!

DIAMOND BLADES LAST LONGER — Smooth, uniform travel eliminates sudden bumps, jolts, side deflections and similar causes of diamond wheel damage. Field reports show up to *DOUBLE* the life from your diamond wheels!

HUSKY, SELF-STARTING 13.5 HORSEPOWER ENGINE — Standard equipment. Also available with 26 h.p. engine (illustrated) for deep cutting with large wheel sizes. CUTS 7 INCHES DEEP with 18" blade! Uses any blade diameter between 10" and 18".

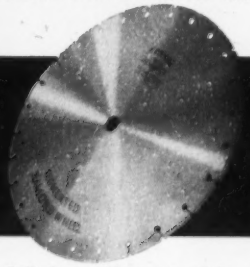
RIGHT OR LEFT HAND OPERATION — Spindle uses diamond wheel on either end.

HYDRAULIC LOWERING AND RAISING MECHANISM eases blade into and out of cut, minimizes blade shock.

WORKS CLOSE TO WALLS, CURBS, ETC. Special hinged blade guard lifts up, exposes wheel for close-up jobs.

Other concrete cutter models available. Ask for literature or see your local DI-MET dealer!

DI-MET
SEGMENTED TYPE
the DIAMOND BLADE with MORE FOOTAGE in its rim!



Built in a wide range of bond variations to deliver peak performance on your individual job! The right bond means longer life, lower cost-per-cut! Specify DI-MET Segmented Type.

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FELKER MANUFACTURING CO.
TORRANCE, CALIFORNIA

WORLD'S LARGEST AND OLDEST MANUFACTURER OF DIAMOND ABRASIVE CUT-OFF WHEELS AND MACHINES

PUBLICATIONS

Reinforcing bars—A new design manual has been published to introduce to builders, architects and engineers the Webrib concrete reinforcing steel bars. The Webrib bars are said to provide for the first time in a single reinforcing bar both high bond and high yield—a combination permitting an overall saving of 25 to 30% of the weight of reinforcing steel in an average structure. The first part of the manual summarizes developments, typical applications, advantages and properties of Webrib bar. The second and larger part furnishes design data, both for substituting Webrib bars in structures originally designed for conventional reinforcing, and for structures designed for Webrib bars directly. This 63-pager is really packed with information. It is available at $2.50 a copy from the WEBRIB STEEL CORP., 120 BROADWAY, NEW YORK, N. Y.

Air conditioners—"'Flexazone'—Central Plant Air Conditioners" is the title of a 6-page brochure that should be of interest to engineers, architects, contractors, the air conditioning industry and the building field in general. Copy points out that several exclusive features claimed for the new product include the unit's greater flexibility and the damper arrangement which permits heating and cooling of a building according to zones. The brochure contains data on the unit's construction and operation and also includes specifications, dimension tables, dimensional diagrams and a nominal selection table. DRAYER-HANSON, INC., P.O. BOX 2215, TERMINAL ANNEX, LOS ANGELES 54, CALIF.

Pumping problems—"How to solve pumping problems" is the title of an informative 36-page booklet. The first section is an introduction containing a general explanation of rotary gear pumps and the factors of pumping problems. Section two contains sample problems encountered in hydraulic systems, general transfer, and pressure transfer. The third section contains technical data such as friction loss in hose, friction loss in pipe ($\frac{1}{2}$ in. to 6 in.), friction loss through fittings, cylinder displacement, viscosity, specific gravity, electrical data and materials of pump construction. Several conversion tables are included in this last section for translating head to pressure, Baume to specific gravity to weight per gallon, and a list of miscellaneous conversion factors. GEO. D. ROPER CORP., ROCKFORD, ILL.

ADVERTISERS IN THIS ISSUE

Aetna Casualty & Surety Co., The 104
Allis-Chalmers Mfg. Co. 41
American Manganese Steel Div., American Brake Shoe Co. 13
American Steel Dredge Co., Inc. 77
Armor Laboratories, Inc. 50
Associated General Contractors of America 71
Atlas Powder Co. 27

Baker-Roos, Inc. 58
Barber-Greene Co. 75
Barco Mfg. Co. 6
Bay City Shovels, Inc. 38, 39
Belmont Iron Works 73
Bethlehem Steel Co. 58
Blaw-Knox Co. 60
Brunner and Lay, Inc. 87
Byers Co., A. M. ..... 2nd Cover

Cement Gun Company 68
Chevrolet Motor Div., General Motors Corp. 46, 47
Cities Service Oil Company 35
Cole Mfg. Co., R. D. 77
Complete Machinery & Equip. Co. 82

Device Development Co. 88
Dorr Co. 68
Douglas Fir Plywood Assn. 57
Dudgeon, Inc., Richard 80

Economy Forms Corp. 72

Fabreeka Products Co. 18
Fairbanks-Morse Co. 82
Felker Mfg. Co. 106
Fennel Instrument Corp. of Amer. 74
Flint Steel Corp. 76
Foundation Equip. Corp. 2

Goodyear Tire & Rubber Co. 1
Greer McClelland Co. 80
Griffin Wellpoint Corp. 72
Gunite Concrete & Const. Co. 107

Harnischfeger Corp. 11
Healy-Ruff Co. 107
Hose-McCann Telephone Co., Inc. 66

Industrial Brownhoist Corp. 73
International Salt Co., Inc. 45
Irving Subway Grating Co. 10

Johns-Manville Corp. 51
Josam Mfg. Co. 44

Kaiser Engineers Div., H. J. Kaiser Co. 66
Keuffell & Esser Co. 85
Knickerbocker Stamping Co. 80

Ladish Co. ..... Insert 54, 55
Lee & Son, W. W. 10
LeRoi Company 62, 63
LeTourneau-Westinghouse Co. 30, 31
Lock Joint Pipe Co. 16
Louisville Cement Co. 105

Madsen Iron Works, Inc. 14
Mahon Co., R. C. 100
Masonite Corp. 8
Master Builders Co. ..... 3rd Cover
McDonough Steel Co. 87
McGraw-Hill Book Co. 72
McKiernan-Terry Corp. 77
Mississippi Glass Co. 88
Mueller Co. 103

Northwest Engineering Co. 3

Pennsylvania Drilling Co. 82
Permacrete Products Co. 80
Phoenix Bridge Co. 82
Pittsburgh Steel Products Co. 4, 5
Portland Cement Assn. 53

Raymond Concrete Pile Co. 9
Remington Rand, Inc. 69
Ryerson & Sons, Inc., Jos. T. 80

Schramm, Inc. 12
Servicised Products Corp. 66
Smith Engineering Works 7
Spencer, White & Prentis, Inc. 59
Sprague & Henwood, Inc. 73

Texas Company ..... 4th Cover
Timken-Detroit Axle Co. 78, 79
Timken Roller Bearing Co. 67
Tinney Drilling Co. 107
Truck Equipment Co., Inc. 83

Union Mercantile Co. 88
U. S. Pipe & Foundry Co. 15

Viber Co. 51
Vulcan Iron Works 85

Wisconsin Motors Corp. 76
Wood Co., R. D. 48
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Two to Sixteen Circuits for Operation by 1 Float

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EDITORIALS

U. S. concrete is not "soup"

STRONG CRITICISM of the type of concrete produced in the U. S. was voiced by Prof. Gustav Magnel, Belgian authority on prestressed concrete, during his recent visit to this country. Prof. Magnel claimed that progress in adoption of prestressed concrete in the U. S. has been slow and attributed this to the fact that contractors manufacture "soup" instead of concrete because the "soup" can be placed in forms more quickly, thus saving labor (ENR Feb. 25, p. 23).

"Soup" is not a correct description of the type of concrete produced by experienced contractors in this country. The day of "soupy concrete" is past, fortunately. The slump of concrete now being produced in this country may be more than Prof. Magnel thinks desirable for prestressed work, but that is because no-slump concrete heretofore has not been considered necessary or desirable. Should our designers of prestressed-concrete structures decide in the future that stiffer concrete is desirable, contractors will supply it.

More toll-road plans

LAST FALL, when the toll-road report published in the Jan. 7 issue of ENR was being compiled, a toll road across northern Indiana was just being financed. Planning for any north-south roads had not advanced to the point where the commission would even advise us as to where such a route might be shown on the map published in that report. Today, engineers are at work on a report for a second toll highway extending south from the Chicago-Gary region to Indianapolis and the Ohio River opposite Louisville, Ky.

Similarly, in Ohio, a second toll highway, cutting diagonally across the state, was only in the talk stage last fall. Now, contracts are about to be let for preliminary engineering studies for that route plus a long north-south branch to tap the Toledo-Detroit area.

Doubtless most of this rapid development is a natural, inevitable result of a growing realization of the possibilities of toll highways as a means for meeting part of the nation's expanding highway needs. But part of it appears to be jockeying for a preferred position in plans for a Lakes-to-Gulf Expressway favored by a few Midwest governors and the Great Lakes to Gulf of Mexico Turnpike Conference.

There may well be traffic enough for north-south toll highways in both Ohio and Indiana, but planning for such major highways should be on a broader basis than just serving tourist travel to Florida or the Gulf States. They should be planned as part of the nation's basic network.

Which consideration points again to the need for a nation-wide study of toll-road plans, such as is proposed in the Case bill, now in the Senate. This bill authorizes the Bureau of Public Roads to spend $100,000 on a toll-road study, but even though that provision is not included in the new federal-aid act as finally passed, some way should be found for the bureau to make such a study at the earliest possible date. In doing that, we are confident that the bureau will have the wholehearted support of the existing turnpike authorities and commissions.

Bright future for concrete

CONGRATULATIONS to the American Concrete Institute on its golden anniversary! Members of this organization, which celebrated the occasion last month in Denver, have a right to feel proud of their achievements during the last half century.

The ACI was founded in 1905 to increase and interpret the working knowledge of concrete. It has been eminently successful in pushing these objectives.

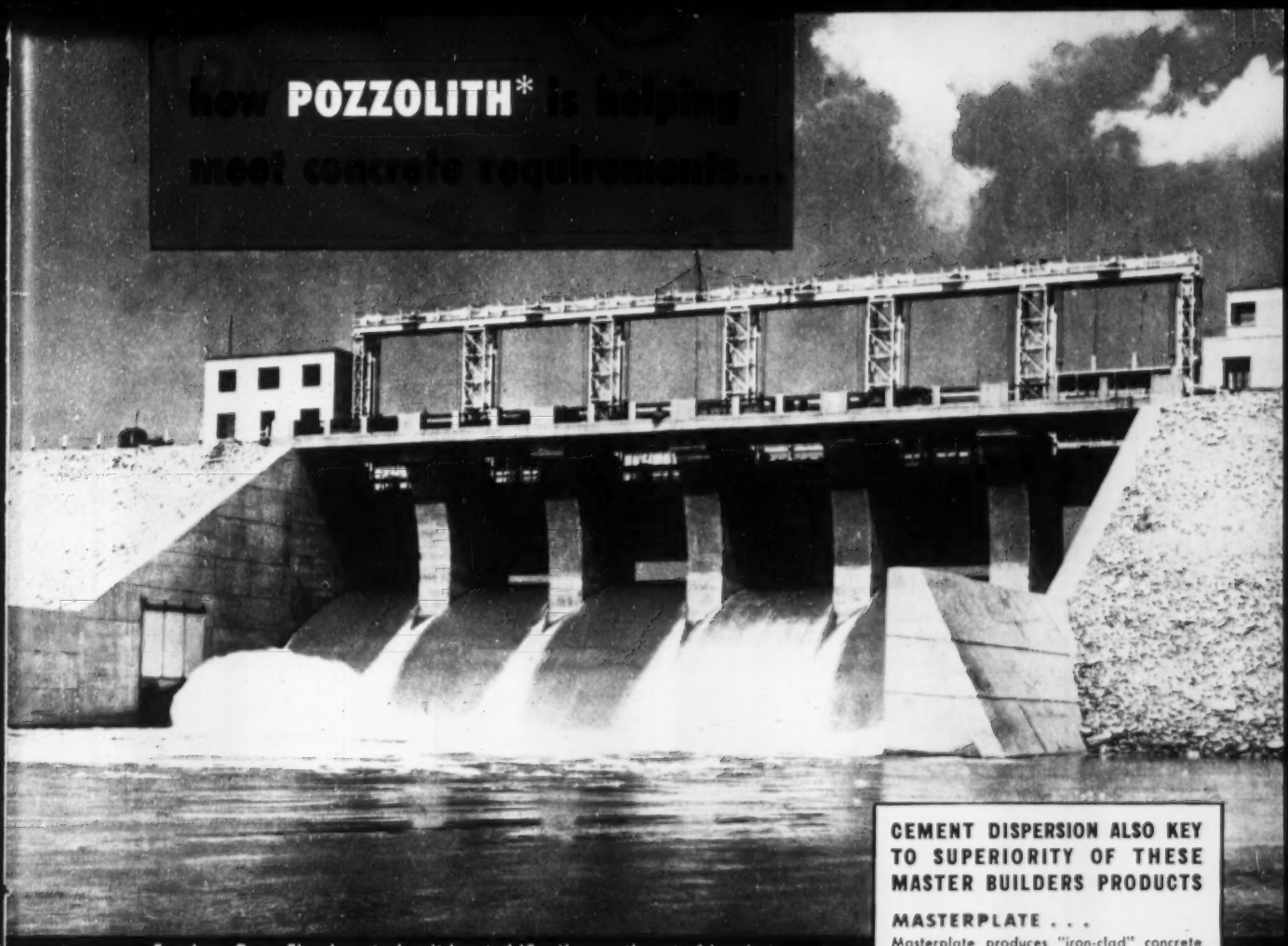
ACI committees have tackled a wide range of baffling problems and solved a great many of them, with the result that concrete design and construction has been changed, since the turn of the century, from rule-of-thumb procedures to practical methods based on scientific studies. ACI has established good-practice recommendations, including the nationally recognized standard, "Building Code Requirements for Reinforced Concrete," which have done much to improve the quality of design and construction. And it has published hundreds of papers and reports to disseminate information on many topics of vital concern to those interested in concrete.

Much still remains to be done to improve the quality of concrete and to better design and construction practices. For example, one of the oldest problems still awaits solution: How to be certain that concrete in place in a structure meets the designer's requirements? To this and other old, unsolved problems must be added a host of new ones, such as those posed by plastic flow, which is an important factor in prestressing.

Also needed are the answers to such general questions as: Is precast concrete more economical than cast-in-place construction? Will prestressing change this relationship? Can concrete with ultimate compressive strength over 10,000 psi be produced economically under field conditions? Should higher unit stresses be permitted for high-strength steel reinforcement? Is continuous mixing ready for a comeback?

That the ACI does not intend to rest on its laurels was made plain by the program selected for its golden anniversary meeting (ENR March 4, p. 23). Speakers looked to the future, not to the past. Such a forward-looking attitude on the part of officers and members augurs well for the future. The last half of this century should see even greater advances in concrete technology than the first.

how POZZOLITH* is helping meet concrete requirements...



Fanshaw Dam. Flood control unit located 15 miles northeast of London, Ontario. Consulting Engineers—H. G. Acres & Company, Niagara Falls; General Contractors—Foundation-Mannix Ltd., Toronto. Concrete supplied by Red-D-Mix Co., Hamilton, Ontario.

an aid here in producing great durability and abrasion resistance

Pozzolith has proved to be a valuable "tool" in the construction of dams, tunnels, reservoirs, retaining walls, and similar structures because it increases the resistance of concrete to freezing and thawing and lowers permeability. In the Fanshaw Dam Pozzolith also helped meet the important requirement of abrasion resistance.

These are several of the reasons for the wide use of Pozzolith... last year in more than 13,000,000 cubic yards of concrete.

Full information on Pozzolith and "see-for-yourself" demonstration kit sent on request.

* **POZZOLITH...** the cement-dispersing, water-reducing agent, developed by The Master Builders Co. in 1932, which makes available the optimum amount of air in concrete and fully complies with the water-cement ratio law. Added at the mixer.

CEMENT DISPERSION ALSO KEY TO SUPERIORITY OF THESE MASTER BUILDERS PRODUCTS

MASTERPLATE . . .

Masterplate produces "iron-clad" concrete floors with 4-6 times longer life; also spark-safe, non-dusting and easy-to-clean. Non-colored and colored. For new floors and resurfacing.

Section of Masterplate Floor. Note Thickness of Armored Surface.

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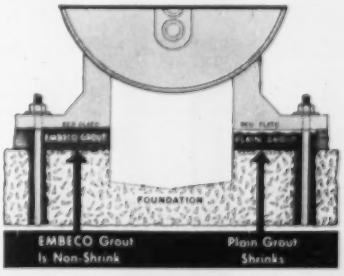
Embeco (1) produces flowable, non-shrink, ductile grout which . . . (2) gives full, level, lasting bedplate contact . . . (3) helps avoid costly shutdowns.



EMBECO Grout Is Non-Shrink | Plain Grout Shrinks

the MASTER BUILDERS Co

Subsidiary of American-Marietta Company

An important bridge needed a new pavement

Washington Bridge at Providence, R. I., serves heavy traffic of US Route 1A, 6 and 44. Now paved with resilient Texaco Sheet Asphalt. Car track area was removed and repaved later.

Washington Bridge at Providence, R. I. is a link in one of the main routes from New York City to Boston and Cape Cod. Traffic on the bridge runs as high as 41,000 vehicles a day, with trucks and buses representing about one-fifth of the total.

Last year, the State Department of Public Works decided to remove the old granite block pavement from the bridge, together with the car tracks. Now serving this heavy traffic is a resilient, heavy-duty Texaco Asphalt pavement, constructed in three courses, with a combined thickness of 4½ inches.

The wearing surface of the new pavement is dense, durable, skid-resistant Sheet Asphalt. Scientifically graded sand and a 60-70 penetration Texaco asphalt were plant-mixed and laid to a thickness of 1½ inches to provide this surface. Rhode Island is well acquainted with the ability of Texaco Sheet Asphalt to absorb punishing impact, as a result of the performance of this type of pavement under some of the State's heaviest traffic.

From Rhode Island to the Rockies, road builders have paved with Texaco asphalt products for over half-a-century. The first step toward insuring the uniformly high quality of these Asphalt Cements, Cutback Asphalts and Slow-Curing Asphaltic Oils is the scientific selection of the crudes from which they are refined. Throughout the refining process, these products are tested and retested to make certain they comply with the specifications in every respect.

Helpful information on all types of Asphalt road street construction is supplied in two booklets, which our nearest office will be glad to send you.

Rhode Island replaces old granite blocks with heavy-duty Asphalt pavement

Removing old blocks and car tracks, preparatory to constructing three-course Texaco Asphalt pavement. Contractor: Narragansett Improvement Company, Providence.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17

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